CURTIS'S
BOTANICAL MAGAZINE,

COMPRISING THE

Plants of the Royal Gardens of Kew,

AND

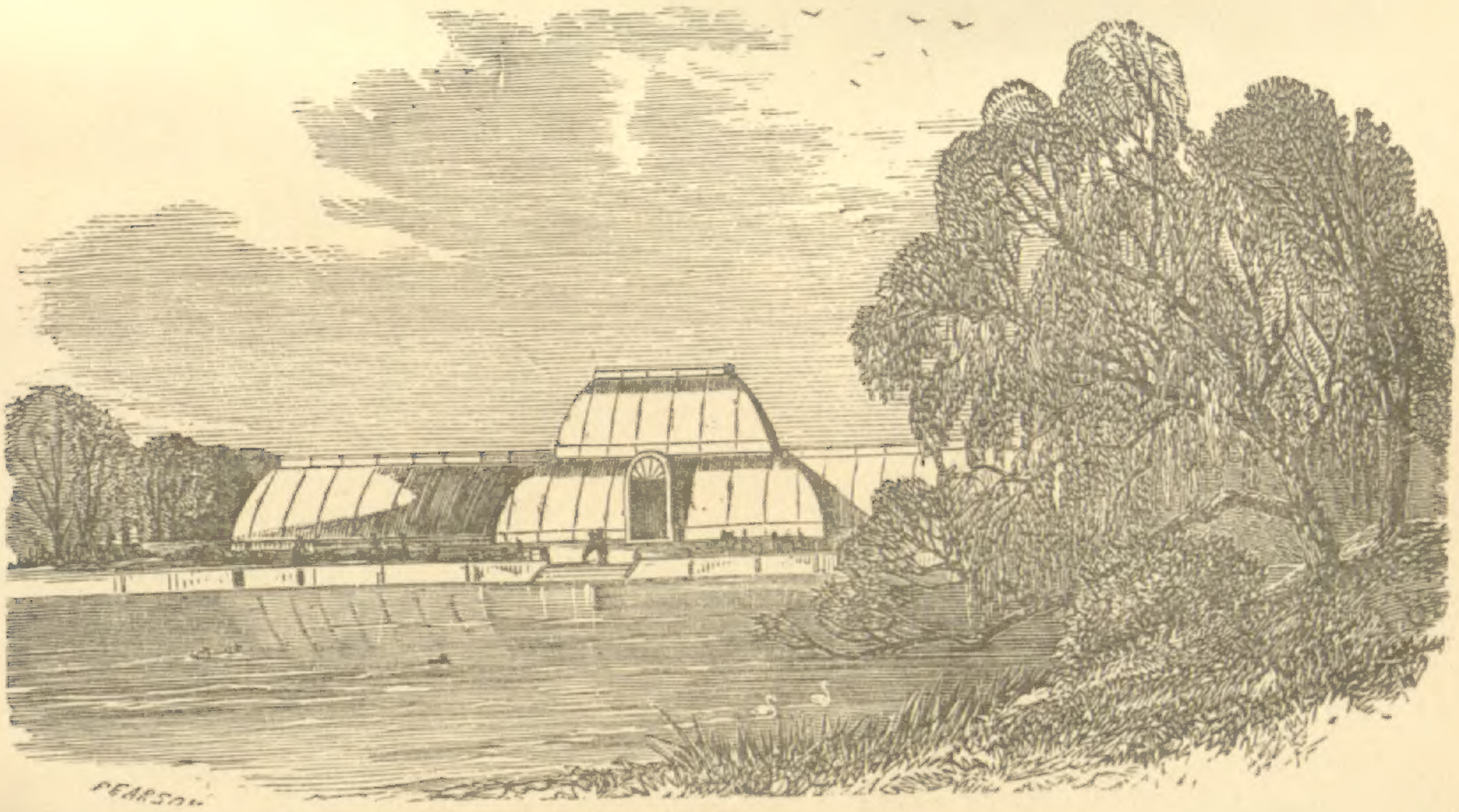
OF OTHER BOTANICAL ESTABLISHMENTS IN GREAT BRITAIN;

WITH SUITABLE DESCRIPTIONS;

BY

SIR JOSEPH DALTON HOOKER, M.D., C.B., G.C.S.I.,
F.R.S., F.L.S., ETC.,
D.C.L. OXON., LL.D. CANTAB., CORRESPONDENT OF THE INSTITUTE OF FRANCE.

VOL. LIII.
OF THE THIRD SERIES.
(Or Vol. CXXIII. of the Whole Work.)



"Thanks to the human heart, by which we live,
Thanks to its tenderness, its joys and fears,
To me the meanest flower that blows can give
Thoughts that do often lie too deep for tears."

WORDSWORTH, *Imit. of Immortality*, ii.

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In Vol. LIII. of the

BOTANICAL MAGAZINE

Plate	7548	*should be*	7549
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And should be placed opposite their respective Letterpress.

TO

A. B. FREEMAN-MITFORD, ESQ., C.B., F.L.S.

Late Secretary H.M. Office of Works, &c.

My dear Mitford,

Duty and pleasure alike prompt me to offer you the dedication of Vol. CXXIII. of the Botanical Magazine, giving me, as it does, the opportunity of recalling the years of our cordial official co-operation, when the Royal Gardens profited so greatly in every department through your energy, foresight, and love of plants.

To this claim I must surely add the service you have rendered to horticulture and botany by your labours in introducing, cultivating, and studying the hardy Bamboos, of which your charming work, "The Bamboo Garden," is the first-fruits. Nor can I omit an allusion to your own garden, unrivalled as it is amongst the private collections of hardy plants in Europe for extent, scientific interest, and beauty.

Believe me, my dear Mitford,

Affectionately yours,

J. D. HOOKER.

The Camp, Sunningdale.

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Late Director of the Royal Botanic Gardens of Kew.

Nature and Art to adorn the page combine,
And flowers exotic grace our northern clime.

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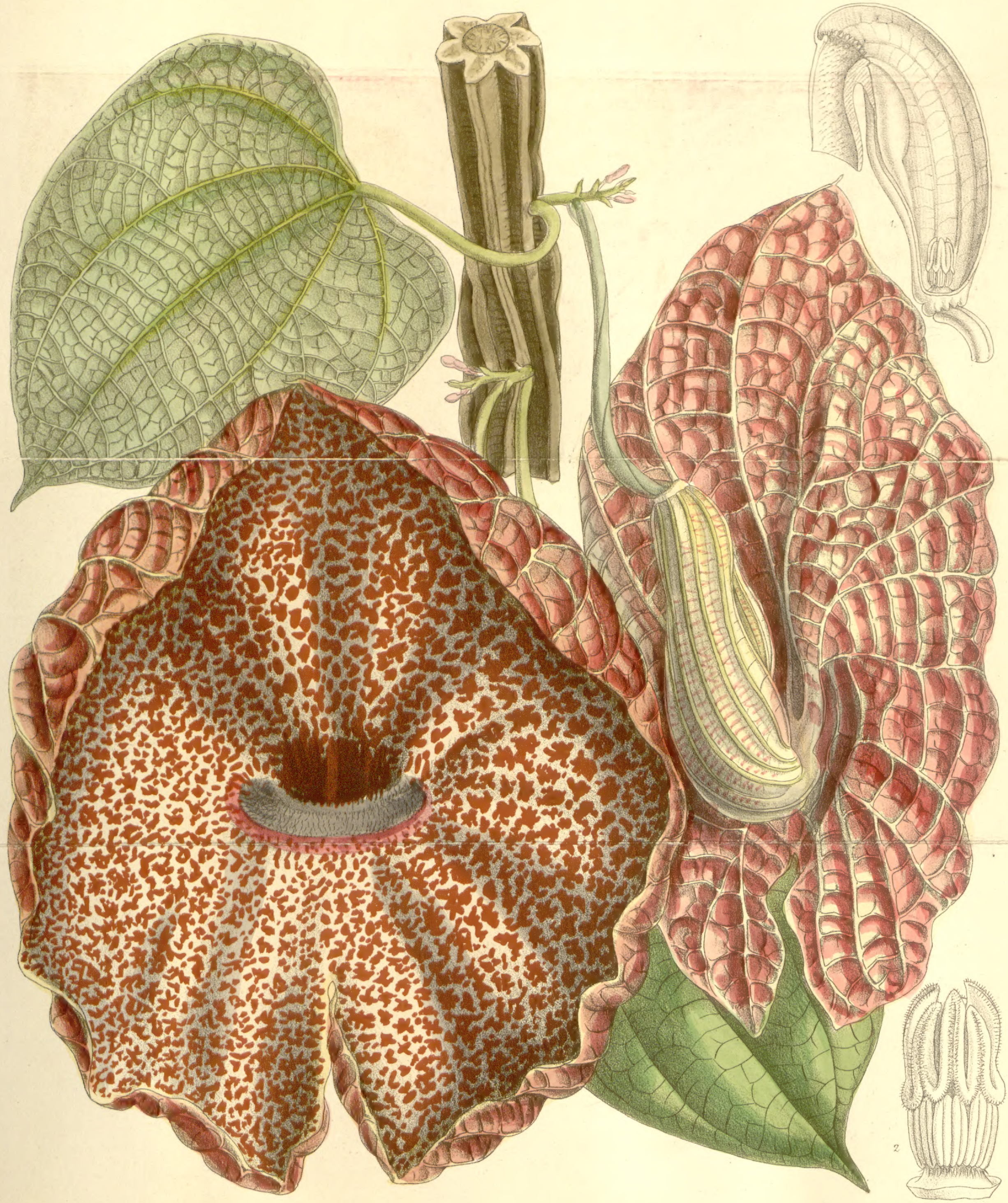

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Tab. 7512.

ARISTOLOCHIA clypeata.

Native of New Grenada.

Nat. Ord. Aristolochiaceæ.

Genus Aristolochia, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 123.)

Aristolochia (Gymnolobus) *clypeata*; caule crasso, cortice profunde 6-sulcato, foliis longe petiolatis orbiculari-ovatis cuspidatis basi truncatis v. leviter cordatis palmatim 5-nerviis, floribus racemis brevissimis caulinis dispositis uno solum sæpissime evoluto, perianthii utriculo clavato gibboso multicostato intus glaberrimo, ore annulo processuum intus spectantium instructo, collo refracto intus laxe piloso in laminam amplam orbicularem concavam antice bifidam maculis substellæ-formibus rubro-purpureis dense aspersam ampliato, laminæ ore postice fascia lata villorum instructo, columna oblonga sessili cylindracea, antheris 6 lineari-oblongis approximatis, styli lobis 6 inæquilongis lineari-elongatis erectis antheras superantibus, marginibus stigmatosis crassis basi confluentibus.

A. clypeata, *André in Illustr. Hortic.* vol. xvii. (1870) p. 223, t. 40. *Gard. Chron.* (1892) vol. i. p. 443. *Gartenfl.* (1893) p. 566, fig. 117. *Watson in Gard. & Forest*, vol. viii. (1895) p. 444.

A. clypeata is another of the ever-increasing host of tropical American Aristolochias. Its nearest ally is *A. Duchartrei*, André (tab. 5880) a native of the Upper Amazons, a much smaller-flowered species, with terete branches, many-flowered racemes, and broad, short, triangular stigmatic lobes. In the size of the flower it approaches *A. gigantea*, Mart. (Tab. 4221) and *A. Gigas*, Lindl., species with long-tailed perianths.

It was discovered in the botanically rich, but notoriously unhealthy Cauca Province of New Grenada, by the indefatigable botanical collector, Mr. E. G. Wallis, and introduced by him into Mr. Linden's establishment in 1868, where it flowered in 1869. In 1892 plants of it were obtained from Messrs. F. Sander & Co., of St. Alban's, for the Royal Gardens, Kew, which flowered in a stove in October, 1895. The flower-buds are developed very numerously from the old stems, but fall off in foggy weather, one only usually developing. It has been distributed in England as *A. gigantea*.

Descr.—A tall climber, with a woody stem, covered with

a thick grey layer of cork, that is deeply cleft into about six ribs that are triangular in section. *Leaves* three or four inches broad, long-petioled, broadly deltoidly or orbicularly ovate, or ovate-cordate, acuminate, palmately 5-nerved from the base, bright green above, pale blue-green beneath, and there strongly reticulate between the main-nerves; petiole two to three inches long, terete. *Racemes* an inch long, from the axils of cauline leaves, or from close beneath the scars left by the fallen leaves, short, horizontal, green, with usually only one perfect flower, and several arrested buds; bracts an eighth of an inch long, lanceolate, green. *Flowers* pendulous; peduncle with ovary nearly three inches long. *Utricle of perianth* three inches long, clavate, gibbous, about ten-ribbed, glabrous and smooth within, except at the constricted mouth, which has a fringe of minute processes pointing downwards; tube of perianth short, infundibular, dark purple and hairy within, rapidly dilating into a concave, nearly circular limb six to ten inches in diameter, bifid anteriorly to nearly half way down, with a narrow sinus, many-nerved and coarsely reticulate externally, internally quite smooth, pale yellowish, closely studded with dark red-purple, irregularly shaped spots; mouth with an anticous semi-circular belt of white, fleshy filaments. *Column* sessile; anthers six, linear, close together; stigma six-cleft, the lobes unequal, narrow, erect, with much thickened stigmatose margins that are confluent below.—*J. D. H.*

Fig. 1, Vertical section of the utricle and perianth-tube, of the *natural size*; 2, column, *enlarged.*

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Tab. 7513.

CYNOGLOSSUM NERVOSUM.

Native of the Western Himalaya.

Nat. Ord. Boragineæ.—Tribe Borageæ.

Genus Cynoglossum, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 848.)

Cynoglossum *nervosum*; elatum, ramosum, strigilloso-hirsutulum, foliis radicalibus et inferioribus elongatis petiolatis anguste oblanceolatis subacutis utrinque hirsutulis, nervis subtus validis, superioribus oblongis lanceolatisve sessilibus acuminatis, racemis demum elongatis 3–6-pollicaribus laxifloris, pedicellis calycem floriferum subæquantibus fructiferis longioribus, calycis segmentis oblongis obtusis corollæ tubum subcampanulatum æquantibus v. paullo brevioribus, corollæ limbo fere $\frac{1}{2}$-poll. lato intense coeruleo, lobis oblongo-rotundatis, faucis squamis emarginatis purpureis basi setulosis, antheris inclusis, nuculis late ovatis marginatis glochidiatis.

C. nervosum, *Benth. ex Clarke in Hook. f. Fl. Brit. Ind.* vol. iv. p. 158.

The largest flowered Himalayan *Cynoglossum*, and a very handsome plant, native of the temperate and sub-alpine regions between Kulu and Kumaon, at elevations of 10,000 to 13,000 ft.

It was first found by Edgeworth, in the Jalauri Pass in Kulu, and has been in cultivation in England for some time, as there are specimens in the Kew Herbarium from Mr. Wilson's garden at Weybridge, dated 1888. Mr. Duthie has collected it at Kumaon and Garwhal, and Dr. Watt at Pangi in Kumaon. The Kew plant from which the accompanying drawing was made, was raised from seed received from Mr. Duthie in 1894; it flowered in the open ground of the Royal Gardens in May, 1896, and fruited in the following June.

Descr.—A tall, erect, branching herb, attaining three feet in height, more or less shortly strigillosely pubescent all over, the hairs being more or less spreading on the stem, and appressed on the foliage; those of the upper surface of the larger leaves arise from small tubercles. *Radical* and *lower* leaves six to ten inches long, narrowly oblanceolate, acute, narrowed into a petiole two or three inches long, upper surface pale green, lower paler, with six or more pairs of strong scabrid nerves that form a very acute angle

with the midrib, and after running parallel to the margins in their upper parts, anastomose with the nerves above them. *Racemes* many, axillary and terminal, three to six inches long, loosely many-flowered; pedicels as long as or longer than the calyx, erect in flower, decurved in fruit. *Calyx* about one-sixth of an inch long; lobes oblong, obtuse, dull purplish. *Corolla*-tube rather longer than the calyx, campanulate; limb nearly half an inch across, very deep cobalt blue; lobes broadly oblong, almost rounded; scales in the throat short, two-lobed, thin, pale purplish blue, tips exserted, their margins below ciliate. *Stamens* included, connective of anther emarginate. *Ovary* of four globose lobes; style stout, one-third of an inch long, base narrowly pyramidal. *Nutlets* of fruit broadly ovate, obtuse, suberect, margins thickened and surface glochidiate.—*J. D. H.*

Fig. 1, Calyx; 2, corolla laid open; 3, anther; 4, scale of mouth of corolla; 5, pistil; 6, fruit:—*All enlarged.*

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Tab. 7514.

BERKHEYA Adlami.

Native of the Transvaal.

Nat. Ord. Compositæ.—Tribe Arctotideæ.

Genus Berkheya, *Ehrh.*; (*Benth. et Hook. f. Gen. Plant.* vol. ii. p. 460.)

Berkheya *Adlami*; caule elato alato, alis angustis undulatis-spinulosis, foliis inferioribus subsessilibus sesquipedalibus obovato-oblongis obtusis sinuato-lobatis supra scabridis læte viridibus brunneo maculatis subtus lana appressa niveis, nervis utrinque 20–30 setosis reticulatis, foliis superioribus linearibus pinnatifido-lobatis, lobis rotundatis setoso-spinulosis sinubus recurvis, capitulis subcorymbosis $3\frac{1}{2}$ poll. diam. aureis, involucri bracteis lanceolatis patenti-recurvis marginibus apiceque spinuloso-ciliatis, receptaculo profunde alveolato, fl. radii sub-biseriatis linearibus 3-denticulatis sterilibus, fl. disci numerosissimis, corollæ tubo angusto puberulo, antheris basi sagittatis, stigmatis ramis linearibus revolutis, acheniis cuneiformibus, pappi squamis brevibus oblongis ciliatis.

B. Adlami, *Hook. f.*

This is by far the largest species of *Berkheya* of which I have any knowledge. The genus contains about thirty species, natives of tropical and chiefly southern Africa. They vary in size from small plants about the size of a Daisy, to the tall and stout species here represented, from glabrous to cottony, and from unarmed to spinulose. The flowers of both disk and ray are yellow in all. *Berkheya* belongs to the tribe of *Arctotideæ* of *Compositæ*, which is almost exclusively South and tropical African, and is the representative of the Thistles (especially the Carlinas) of Europe and North Africa. The best known representative of the tribe in gardens is *Arctotis*; but three species of *Berkheya* are figured in the early volumes of this magazine, when the culture of Cape plants was in vogue. These are *B.* (*Stobæa*) *pinnata*, Less. t. 1788; *B. grandiflora*, Willd., t. 1844, and *B. uniflora*, Willd, t. 2094.

B. Adlami was raised from seeds sent to the Royal Gardens, Kew, in 1895, by R. W. Adlam, Esq., of Johannesberg, plants raised from which flowered, some in a greenhouse, and others in the open air in June, 1896.

As stated under t. 2094, the genus was named by

Ehrhart in recognition of Johann Francq Van Berkhey, the learned author of a treatise on the structure of the flowers of "Composite Plants," published in 1760.

Descr.—*Stem* attaining six feet in height, simple or sparingly branched, herbaceous, narrowly spinulosely winged by the decurrent leaf-bases. *Radical* leaves very large, eighteen inches long by seven broad, obovate-oblong, tip rounded, sinuate-lobed, margins undulate and spinulosely toothed, base narrowed into a winged petiole, scabrid and green above, beneath snow-white with appressed cottony pubescence; upper leaves three to six inches long, linear or oblanceolate, sinuate-pinnatifid, spinulosely toothed, margins of sinus often recurved, above dark green and scabrid, with brown blotches and spots beneath, as are the cauline. *Heads* subcorymbose, three and a half inches in diameter; peduncles suberect, terete, green, scabrid. *Involucre* broadly campanulate; bracts half as long as the ray-flowers, squarrosely spreading, lanceolate, green, tips red-brown and spinescent, margins ciliate. *Receptacle* flat. *Ray-flowers* very many, an inch long, primrose-yellow, spreading and recurved, neuter, tube slender, quite glabrous, tip of ligule 3-crenulate. *Disk flowers* excessively numerous, forming a convex golden-yellow mass, nearly two inches in diameter; corolla tubular, 5-cleft. *Achenes* short, obconic, ten-ribbed, top thickened; pappus of oblong ciliate or serrulate scales shorter than the achene.—*J. D. H.*

Fig. 1, Portion of the receptacle with a ray-flower, and two achenes sunk in the alveoli; 2, disk-flowers; 3 scale of pappus; 4, stamens; 5, style-arms; 6, achene:—*All enlarged.*

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Tab. 7515.

CROTON ELUTERIA.

Native of the Bahama Islds.

Nat. Ord. Euphorbiaceæ.—Tribe Crotoneæ.

Genus Croton, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 293.)

Croton (Eluteria) *Eluteria*; frutex v. arbuscula lepidota, ramis gracilibus, foliis longiuscule petiolatis ovato-cordatis obtuse acuminatis utrinque subtus precipue argenteo-lepidotis penninerviis marginibus subcrenatis, petiolo gracili eglanduloso, stipulis obsoletis: *fl. masc.* calycis laciniis 5 patulis ovato-oblongis obtusis, petalis calyce duplo longioribus subspathulatis obtusis utrinque pubescentibus, staminibus 10–12 petalis longioribus, *fl. foem.*: calycis tubo hemispherico, lobis 5 late ovatis obtusis erectis ciliolatis, petalis maris, disci glandulis 10 minutis, staminodiis paucis, ovario globoso glanduloso, stigmatibus 3 sessilibus multifidis.

C. Eluteria, *Benn. in Journ. Linn. Soc. Bot.* vol. iv. (1860) p. 29. *Daniell in Journ. Pharm. Soc. Ser.* 2, vol. iv. p. 145, *cum Ic. Müll. Arg. in DC. Prodr.* vol. xv. pars. II. p. 516. *Bentl. & Trim. Med. Pl.* t. 238. *Griseb. Fl. Brit. W. Ind.* p. 39 (*partim*).

C. homolepidus, *Muell. Arg. l. c.* 518. ?

C. cascarilloides, *Griseb. Cat. Pl. Cub.* 17 (*Herb. Wright.* n. 1971)? (*non Geisel.*).

Clutia Eluteria, *Linn. Sp. Pl.* p. 1042 (*excl. Syn.*).

C. Eluteria s. Cascarilla, *Woodv. Med. Bot.* p. 633, t. 223, fig. 2.

Elutheria, *Linn. Hort. Cliff.* p. 486.

Elutheria Providentiæ, folio cordato, &c., *Petiv. Coll.* (1747) 4, n. 276.

This interesting plant, the "Sweet-wood" of the Bahamas, yields the "Cascarilla Bark" of commerce, which has been from a very early period imported into Europe from Nassau, New Providence; though it was not till comparatively recently (1860) that it was distinguished from several congeners with which it had been confounded. It seems to have been in cultivation in Europe upwards of a century and a half ago, for it is enumerated by Linnæus in his "Hortus Cliffortianus," published in 1737, and according to Dr. Daniell it was introduced into England (probably from Holland) by Phillip Miller, though I do not find any mention of it in that author's "Dictionary of Gardening." Its identification as the Linnæan *Elutheria Providentiæ* by the late Mr.

Bennett, of the British Museum, is due to the specimen of the Hortus Cliffortianus being in that institution.

C. Eluteria is a native of all, or almost all, the islets of the Bahamas Archipelago; and probably also of Cuba, for the *Croton homolepidus* of the latter island is hardly, if at all, distinguishable from it (by dried specimens). The bark is exported in the form of quills, and having an agreeable aromatic odour when burned, is an ingredient in the manufacture of incense and pastilles, and is also used to flavour tobaccos. Its taste, on the other hand, is warm and nauseously bitter, which is against its employment as a drug, for which it is recommended in cases of chronic diarrhœa, dysentery, and some forms of dyspepsia. The annual export of the bark, which has been during the last twenty years, on an average, 100,000 lbs., is now decreasing, and this has led the Governor of the island, Sir W. F. Haynes Smith, K.C.M.G., in a dispatch dated May 6th, 1896, to address a request to the Secretary of State for the Colonies, "that the authorities of Kew would assist him in framing regulations for the gathering the 'Cascarilla Bark' on the Crown lands of the Colony." In this dispatch Sir W. Haynes Smith points out "that the sources of supply have been improperly drawn upon, to the destruction of the plant and the quality of the bark," and that the latter "might be improved, and its use in commerce largely increased. He adds, that "the best quality is gathered at Atwood's Cay, containing about 6500 acres, which is altogether Crown property, where licenses to gather have hitherto been granted, but where there are no regulations on the subject of gathering, or revenues derived from it, while the supply is deteriorating."

In accordance with this request, in the following June, Dr. Morris, the Assistant Director of Kew, who had visited the Bahamas, drew up a Report, indicating the proper measures to be taken for increasing both the quantity and quality of the bark in future, and other matters for consideration in connection with the subject.

It is only of late years, and after a prolonged correspondence, that living plants of this *Croton* have been reintroduced into Europe. This was in May, 1887, when a case containing three was received at the Royal Gardens

from F. E. Taylor, Esq., son of the Colonial Secretary of the Bahamas. The plants grew very slowly, and did not flower till 1896, when male flowers matured in March, and were followed by females in May. The plant has proved to be very difficult of propagation. The name is that of one of the Bahama Islets (Eleuthera).

Mr. Morris describes the odour of the flowers as deliciously sweet.

Descr.—A shrub, rarely small tree, attaining twenty feet in height, with a trunk eight inches in diameter; branches few, suberect, wiry; bark fissured; twigs, petioles, leaves beneath, and inflorescence densely covered with minute peltate, orbicular, lepidote scales with fimbriate margins. *Leaves* one and a half to two inches long, deflexed, alternate, petioled, stipulate, ovate-lanceolate, narrowed to the obtuse apex, subdenticulate, penninerved, base rounded or cordate, upper surface dull pale or dark green, under surface dull silvery, the scales obscuring the nerves. *Flowers* monœcious, in erect, short, simple or branched axillary and terminal racemes, very small, globose; bracts shorter than the pedicels.—*Male fl.* calyx hemispheric, lobes broadly ovate, obtuse. *Petals* very small, longer than the calyx-lobes, obovate-spathulate, obtuse, pubescent, white. *Stamens* 10–15, filaments glabrous, anthers oblong. *Pistillodes* 0.—*Fem. fl.* at the base of the inflorescence. *Petals* hardly longer than the calyx-lobes. *Stamens* few, very short, imperfect. *Ovary* subglobose, styles multifid. *Capsule* about a quarter of an inch in diameter, subglobose; valves crustaceous, silvery-lepidote. *Seeds* orange-brown, shining, dorsally flattened, laterally compressed, raphe keeled.—*J. D. H.*

Fig. 1, Male flower; 2, the same spread open; 3, lepidote scales from do.; 4. petal; 5, stamen; 6, female flower; 7, ovary and staminodes of the same; 8, ovary bisected vertically, showing the ovules:—*All enlarged.*

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Tab. 7516.

BIGNONIA buccinatoria.

Native of Central Mexico.

Nat. Ord. Bignoniaceæ.—Tribe Bignonieæ.

Genus Bignonia, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 1033.)

Bignonia *buccinatoria*; alte scandens, ramis teretibus v. subangulatis, foliis 2-foliolatis, petiolo apice nudo v. cirrhifero, foliolis petiolulatis ovato-oblongis ellipticisve obtusis v. cuspidatis basi cuneatis rotundatis cordatisve pellucido-punctatis glabris v. subtus secus nervos pilosis, petiolulis $\frac{1}{4}$–$\frac{3}{4}$ poll. longis, racemis axillaribus terminalibusque rachi pedicellis crassis calyceque subfurfuraceo-tomentosis, floribus pendulis, calyce poculæforme ore truncato 5-dentato basi rotundato, corollæ 4-pollicaris tomentellæ tubo brevi flavido in faucem bucciniformem sanguineam lente curvam sensim attenuato, lobis 5 amplis rotundatis bifidis, filamentis glabris, antheris vix exsertis loculis e basi divaricatis linearibus incurvis, connectivo dorso mucronato, disco crasso, ovario pubescente.

B. buccinatoria, *Mairet, ex DC. Prodr.* vol. ix. p. 195. *Helms. Biol. Centr. Amer. Bot.* vol. ii. p. 490.

B. Cherere, *Lindl. Bot. Reg.* t. 1301, *excl. Syn.* (*non B. Kerere Aublet.*)

B. Kerere, *Hort.*

Pithecoctenium buccinatorium, *DC. l. c. D'Ancona, in Bull. Soc. Tosc. Ort.* vol. xiii. (1888) p. 272, t. xi.

Phædranthus buccinatorius, cinerascens, exsertus & Lindleyanus, *Miers. in Proc. R. Hort. Soc.* vol. iii. (1863) p. 182, 183.

B. buccinatoria was introduced into the Gardens of Dropmore upwards of sixty years ago, by the Earl of Granville, by whom specimens were forwarded to Dr. Lindley, who figured it in the *Botanical Register* as *B. Cherere*, supposing it to be the *B. Kerere*, Aubl., of Surinam, a species with much smaller and yellow flowers. It is a native of elevations of 6000–8000 ft. in Central Mexico, and must have been discovered in the last century, for there is a specimen from Pavon in Bentham's Herbarium now at Kew. In later years it has been collected by various botanists in the same country, and by one, Bilimek, at Puebla in South Mexico.

There are several South American species of *Begonia* closely allied to *B. buccinatoria*, including the above

mentioned *B. Kerere* of Aubl.; but the whole genus is in a state of confusion, many of the species in herbaria being undescribed; and few of these being known in a fruiting state, the important characters of the capsule and seeds are unascertained.

The specimen of *B. buccinatoria* here figured was sent by Thomas Hanbury, Esq., F.L.S., from his magnificent botanical garden at Palazzo Orengo, La Mortola, near Ventimiglia, in July. The flowers are of a far deeper blood-red colour than they are represented to be in the other figure of the plant.

Descr.—A tall, woody climber, with more or less obtusely angled branches. *Leaves* bifoliolate, petiole usually ending in a branched tendril; leaflets two to three inches long, elliptic or ovate-oblong, cuspidate or obtuse, thinly coriaceous, dotted with pellucid glands, glabrous above and beneath, or with scattered hairs on the nerves beneath, base rounded cuneate or subcordate; petiole short, petiolule one-fourth to three-fourths of an inch long, terete, and rachis of raceme scurfily tomentose; nerves about six pairs, arching; a pair of very small elliptic leaflets is often present at the very base of the petiole, and on the joints of the rachis of the raceme. *Flowers* pendulous in terminal racemes; rachis of raceme erect, stout, thickened and sometimes leafing at the nodes, few-flowered; pedicels one half to three-quarters of an inch long, decurved, stout, green. *Calyx* half an inch long, and nearly as broad, green, cup-shaped, terete; mouth truncate, irregularly 5-toothed; base rounded. *Corolla* four inches long, finely tomentose, with a short pale yellow tube, gradually dilating into the long dark blood-red clavate or trumpet-shaped throat and lobes, slightly curved; lobes half an inch long and broad, bifid, spreading. *Filaments* slender; anthers hardly exserted, of two narrow sausage-shaped divaricate cells, the very small connective produced into a short dorsal spur. *Disk* annular, thick, raised. *Ovary* ovoid, tomentose; style slender, puberulous; lobes of stigma narrowly ellipsoid.—*J. D. H.*

Fig. 1, Calyx halved, showing the disk and ovary; 2 and 3, anthers:—*All enlarged.*

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Tab. 7517.

MYRMECODIA Antoinii.

Native of Torres Straits.

Nat. Ord. Rubiaceæ.—Tribe Psychotrieæ.

Genus Myrmecodia, *Jack.*; (*Benth. et Hook. f. Gen. Plant.* vol. ii. p. 132.)

Myrmecodia *Antoinii*; tubere subgloboso ecostato sublacunoso spinulis brevibus simplicibus pungentibus aspero, caule robusto simplici v. ramoso tetragono regulariter clypeolato, clypeolis ½ poll. diam. seriebus 4 superpositis imbricatis orbiculatis bidentatis ambitu dense pectinatim spinulosis, foliis elliptico-ovatis oblongis v. obovatis acutis in petiolum lamina ter quaterve breviorem angustato, floribus ½ poll. longis rimis interclypeolaribus sessilibus albis, calycis tubo tereti, limbo truncato obscure 4-dentato, corollæ tubo calyce ter longiore intus 4-costato et infra medium annulo pilorum instructo, lobis 4 oblongis, staminibus ore corollæ insertis, filamentis brevibus crassis, antheris ovatis, stylo gracili, stigmate infundibulari truncato crenulato.

M. Antoinii, *Beccari, Malesia*, vol. ii. p. 116, t. xix. figs. 2–4.

M. echinata, *Antoine in Bot. Zeitschr.* vol. xxxii. (1882) p. 347, *cum Ic. F. Muell. Fragment. Fl. Austral.* vol. vii. p. 45; *Syst. Census of Austral. Pl.* vol. i. p. 75? *non Gaud.*

Under *M. Beccarii*, figured at t. 6883 of this work, mention is made of two other species, natives of Torres Straits, one of which is the subject of the accompanying plate. It is a much more remarkable plant than *M. Beccarii*, on account of the size of the tuber, the stoutness of the stem, and the linear arrangement in four ranks of the very remarkable scutelliform spinulose persistent stipular organs, which almost conceal the stem. It was at first described as *M. echinata*, Gaudichaud, of the Islands of Rawak and Wagiou; but that species has ribbed tubers, and larger leaves with much longer petioles.

The first specimen of this singular plant imported into Europe was obtained from Thursday Island, Torres Straits, by Dr. Moskovicz of Batavia, who gave it to the late Ferd. Ritter von Hochstetter. The latter gentleman sent it to Vienna, where it was described by Antoine as cited above. The magnificent specimen here figured was pre-

sented in 1893 to the Royal Gardens, Kew, by Prof. Stewart, F.R.S. (late President of the Linnæan Society), Conservator of the Museum, and Hunterian Professor of the Royal College of Surgeons. It flowered in a stove in January, 1896, and ripened its seeds in the following spring.

Descr.—*Tuber* (of the Kew plant) nineteen and a half inches in circumference, of a dull iron grey colour, and with a shallowly lacunose surface, loosely covered with small acicular spines rising from scattered tubercles. *Stem* eight and a half inches long by four and a quarter in circumference, inclined and flexuous, deeply four grooved, the ribs between the grooves closely covered with a series of imbricating orbicular woody shields (indurated stipules) which are half an inch in diameter, depressed in the middle and bifid at the top with diverging short lobes, and studded with short spinules round their margins. *Leaves* at the top of the stem, four to five inches long, elliptic-ovate oblong or obovate, acute, bright green on both surfaces, narrowed at the base into a stout, terete petiole; nerves four to six pairs, arched. *Flowers* half an inch long, white, sessile, inserted on the ribs below the stipular shields, which conceal the calyx and lower part of the corolla-tube. *Calyx* broadly oblong, terete, truncate; limb very short, obscurely 4-toothed. *Corolla* clavate, four-lobed in the upper fourth; tube terete, four-ribbed within, and with a ring of hairs below the middle; lobes oblong, tips obtuse, thickened, incurved. *Stamens* inserted below the meeting of the lobes; filaments short, stout, included; anthers broadly ovate, exserted. *Disk* tumid. *Ovary* four-celled. *Style* stout, dilated into an infundibular truncate stigma.—*J. D. H.*

Fig. 1. Portion of upper leafing stem and leaves; and 2 of lower flowering, both *of the natural size*; 3, stipular shields; 4, flower; 5, corolla laid open; 6, ovary, style and stigma:—*All enlarged*; 7, seedling of the *natural size*; 8, view of whole plant *greatly reduced*.

MAXILLARIA Sanderiana.

Native of Ecuador.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Maxillaria, *Ruiz & Pav.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 555.)

Maxillaria (Acaules) *Sanderiana*; pseudobulbis brevibus fere orbicularibus compressis, vaginis lanceolatis acuminatis rigidis brunneis caducis, foliis oblanceolatis cuspidatis in petiolum validum angustatis coriaceis supra saturate viridibus subtus pallidis, costa valida, nervis paucis obscuris, scapo robusto rubro-purpureo vaginis oblongis obtusis brunneis fere velato, flore maximo, sepalis petalisque albis basin versus sanguineo-purpureis, sepalo dorsali 2-2½-pollicari oblongo obtuso, lateralibus triangulari-ovatis obtusis basi in mentum latum rotundatum conniventibus, petalis sepalis multoties minoribus late ovatis acuminatis, labelli tubo atro-sanguineo intus appendice clavato applanato instructo, lobis lateralibus parvis, terminali rotundato flavo marginibus crispatis, columna **alba sanguineo-purpureo maculata, anthera aurea.**

M. Sanderiana, *Reichb. f. in Sander, Reichenbachia*, vol. i. (1888) p. 57, t. 25. *Journ. Hortic. Ser.* III. vol 26, t. 495, fig. 89. *Rev. Hortic.* (1894) p. 326, *cum Ic. Warner, Orchid Album*, vol. x. t. 463.

This, which is rightly regarded by M. André as the finest known species of the genus, was discovered by Mr. Edward Klaboch in the Andes of Peru, according to whom it inhabited an elevation of 4000 ft.; but according to M. André, it is more probably a native of Ecuador; and having regard to the fact that it flourishes in a cool Orchid House, it may be expected to inhabit a much higher elevation than that assigned to it.

The nearest ally of *M. Sanderiana* is *M. grandiflora*, Lindl., which has much narrower sessile leaves, a more slender green scape with green bracts, and a pure white flower, except the lip, which is streaked with purple. *M. venusta*, Lindl. (Tab. 5296) is another allied species, remarkable for the long, narrow, pure white, acuminate sepals and petals, the lip of which has a purple spot on each side of the tube, and a yellow midrib.

M. Sanderiana was first flowered by Baron Schröder (in 1885). The specimen here figured is from the cool

Orchid House of the Royal Gardens, Kew, where it flowers annually.

Descr.—*Pseudobulbs* clustered, sessile on a very short, rarely elongated rootstock, one to one and a half inches long, from orbicular to broadly oblong, rounded at top and base, compressed, smooth, pale green ; sheaths few, up to three inches long, lanceolate, acuminate, striate, dark brown, rigid, caducous. *Leaves* few, six to ten inches long, oblanceolate, cuspidate, narrowed into a stout petiole, coriaceous, dark green, smooth and shining above, pale beneath with a raised green midrib, and three or more pairs of very faint nerves. *Scapes* two to three inches long, ascending from the base of the pseudobulb, very stout, red-brown, clothed with oblong obtuse brown sheaths, of which the median are an inch long, the lower shorter, and the uppermost longer. *Flowers* four inches broad across the lateral sepals, which and the petals are pure white, except towards the base, where they are of a purplish-red colour, broken upwards into blotches. *Dorsal sepal* oblong, obtuse, concave, arched ; lateral triangular-ovate, obtuse, conniving at the base into a broad rounded mentum. *Petals* much smaller than the sepals, broader below, and narrowed into acute triangular tips. *Lip* with a very dark purple tube, on the disk of which within is a flattened club-shaped adnate smooth appendage; lateral lobes hardly any ; terminal rounded, bright yellow, with a crisped border, which is faintly streaked with purple. *Column* white, spotted and streaked with red-purple. *Anther* orange-yellow.—*J. D. H.*

Fig. 1, Base of lip with adnate appendage ; 2, column ; 3, pollinia :—*All enlarged.*

7519

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Tab. 7519.

LIGUSTRUM coriaceum.

Native of Japan.

Nat. Ord. Oleaceæ.—Tribe Oleineæ.

Genus Ligustrum, *Tourn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 679.)

Ligustrum *coriaceum*; frutex glaberrimus, subtortuosus, ramulis robustis, foliis confertis breviter petiolatis crasse coriaceis ovato-rotundatis orbicularibusve supra convexis saturate viridibus lucidis marginibus anguste rubro-purpureis, paniculis breviter pedunculatis, pedunculo rachi ramisque validis, floribus in capitula dense congestis brevissime pedicellatis sessilibusve, bracteolis minutis subulatis, calycis cupularis limbo truncato, corollæ tubo lobis ovatis obtusis æquilongo, filamentis brevibus, antheris oblongo-rotundatis, baccis pisiformibus.

L. coriaceum, *Carrière in Rev. Hortic.* (1874) p. 418, fig. 56, and (1888) p. 439, fig. 101. *Fl. & Pomol.* (1876) t. 65. *Forbes & Hemsl. in Journ. Linn. Soc.* vol. xxvi. (1889) p. 90. *Dippel Handb. Laubholz* vol. i. p. 130.

L. lucidum, *var. a* coriaceum, *Decne in Fl. des Serres*, vol. xxii. (Ser. II. vol. xii.) (1877) p. 8.

L. japonicæ forma difformis, *Blume Mus. Bot. Lugd. Bat.* vol. i. p. 313, *in nota.*

?L. coriaceum, *Nois. Hortul.* "Species ignota," *DC. Prodr.* vol. viii. p. 294.

Ligustrum coriaceum is one of the most distinct-looking of the puzzling genus to which it belongs, and though reduced by Decaisne to a variety of *L. lucidum* (t. 2565) it is so different in habit and foliage from that plant, that until connecting links between them are found, it may well be kept as specifically distinct. Blume with less reason regarded it as a deformed condition of *L. japonicum*, a species with spreading pedicels and obovoid berry.

There are some doubts as to the native country of *L. coriaceum*. It was introduced into England about 1860, by Fortune, who, according to Standish (then the recipient of Fortune's plant), sent it from Japan. Probably it was procured, like so many other plants sent home by Fortune, from a Japanese garden, for there are no indigenous specimens of it in the Kew Herbarium, except a mere scrap, collected by Oldham, and ticketed "Japan, Korean Archipelago," and it is not enumerated in Franchet and Savatier's

enumeration of Japan plants, or in Miquel's "Prolusio Floræ Japonicæ."

At Kew it was first obtained, in about 1879, from the Jardin des Plantes, amongst a collection of species of *Ligustrum* sent by M. Decaisne shortly after he enumerated those known to him, in the "Flore des Serres." Though it stood out of doors at Kew for several years, it suffered from cold winters, and never throve. In Cornwall, however, it is quite hardy. The figure here given is of a specimen kindly sent in 1889 to the Royal Gardens by Mr. Rashleigh of Menabilly, which flowered in the Temperate House in June of the present year.

Descr.—A rigid, closely branched, evergreen, rigid shrub, three to six feet high, perfectly glabrous; branches and branchlets stout, leafy. *Leaves* two to two and a half inches long, shortly, stoutly petioled, orbicular or orbicular-ovate, tip rounded, rigid, coriaceous, dark green, convex and shining above with a very narrow red-purple border, paler beneath, nerves very slender and faint. *Panicle* two to four inches long; peduncle, rachis and spreading branches stout. *Flowers* collected in globose, terminal and lateral clusters or heads on the panicle, sessile or very obscurely pedicelled, white; bracteoles minute, subulate. *Calyx* cupular, limb truncate, obscurely toothed. *Corolla* one-quarter of an inch in diameter, tube about as long as the ovate spreading and recurved lobes. *Stamens* normally two, but three to four occur; filaments very short. *Ovary* globose, style stout, stigma 2-lobed. *Berry* globose, the size of a small pea, black.—*J. D. H.*

Fig. 1, Flower and bracteoles; 2, bracteole, calyx and ovary; 3 and 4 stamens:—*all enlarged*; 5, fruit *of the natural size*; 6, calyx and berry, and 7, seed, *both enlarged.*

M.S del, J.N. Fitch lith.

L. Reeve & Co. London.

Tab. 7520.

PARACARYUM heliocarpum.

Native of the Western Himalaya.

Nat. Ord. Boragineæ.—Tribe Borageæ.

Genus Paracaryum, *Boiss.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 849.)

Paracaryum *heliocarpum*; elatum, cano-pubescens, foliis radicalibus longe petiolatis elliptico-lanceolatis acutis triplinerviis, caulinis oblongis lanceolatisve sessilibus, floribus subpaniculatim cymosis, cymis elongatis gracilibus demum dissitifloris apicibus decurvis, pedicellis gracilibus, calycis lobis oblongis obtusis tubo corollæ æquilongis, corollæ tubo brevi, limbi campanulati lobis brevibus orbiculatis oblatisve azureis, antheris linearibus, fornicibus, inclusis elongatis ciliolatis apice 3-lobis quam stamina altius insertis, stylo gracili elongato, nuculis orbiculatis dorso depressis echinulatis marginibus incurvis pectinatim glochidiatis.

P. heliocarpum, *Kerner in Rev. Naturw. Vers. Innsbruck*, vol. i. (1870) p. 105. (*Nov. Pl. Sp.* ii. p. 9.) *Clarke in Hook. f. Fl. Brit. Ind.* vol. iv. p. 161.

P. anchusoides, *Benth. & Hook. f. ex Aitchis. in Journ. Linn. Soc.* vol. xviii. (1881) 80.

Cynoglossum anchusoides, *Lindl. in Bot. Reg.* vol. xxviii. (1842) t. 14. *DC. Prodr.* vol. x. p. 151.

C. Emodi, *Schouw Ind. Sem. Hafn Coll.* (1846) 4.

C. Emodum, *Schouw in Linnæa* xxiv. (1850) 160.

C. macrostylum, *Bunge Reliq. Lehm.* (1847) 236.

Lindolfia anchusoides, *Lehm. in Linnæa*, vol. xxiv. (1851) p. 216.

Echinospermum, No. 1, *Herb. Strachey & Winterbottom.*

The genus *Paracaryum* is distinguished from the typical species of *Cynoglossum* by the nutlets of the fruit being more erect on the gynobase, and their bases not being rounded or subacute, characters of scarcely appreciable value, and which may probably disappear on a revision of the genera of *Boragineæ*, in which case the original name of *Cynoglossum anchusoides* will be restored for this plant.

P. heliocarpum was introduced into the Gardens of the Royal Horticultural Society by seed sent from the North-Western Himalaya in 1840, but had long since disappeared from cultivation. It ranges over a wide extent of mountain country, at elevations of 7000 to 11,000 ft., from Lahul and Kashmir northwards to Tibet, westward into Affghanistan, and as far east as the Tibetan region north of

Kumaon, where it was collected by Strachey and Winterbottom, at probably 15,000 ft. elevation. It reappears in Bokhara, having been found near Samarkand by the traveller, Lehmann. The specimen figured was raised from seed sent in 1894 by Mr. Duthie, F.L.S., Director of the Botanical Department of Northern India. It flowered in the herbaceous grounds of the Royal Gardens in May of the present year, and is perfectly hardy.

Descr.—A hardy perennial, one to three feet high, clothed with an appressed hoary or subsilvery pubescence. *Stem* stout below, slender and sparingly branched above, the branches bearing slender terminal at length elongate drooping cymes. *Radical leaves*, eight to eighteen inches long, by one-third of an inch to three inches broad, elliptic lanceolate, acute, three to five-nerved, and penni-nerved; cauline leaves few, linear. *Cymes* very slender, long-peduncled, many-fld., ebracteate; flowers remote, except towards the apex of the cymes, half an inch long, nodding or drooping, slender pedicels half to three-quarters of an inch long. *Sepals* one-fourth of an inch long or less, oblong, obtuse, green, pubescent. *Corolla* rose-purple, with bright blue limb; tube as long as the calyx; limb longer, infundibular-campanulate, lobes short, orbicular, or broader than long. *Stamens* included, inserted below the mouth of the tube, rather lower down than the scales, which are ciliate, 3-lobed at the tip. *Style* half an inch long. *Nutlets* orbicular, with a depressed echinate or tubercled disk and incurved pectinately glochidiate coriaceous margins.—*J. D. H.*

Fig. 1, Calyx and style; part of corolla laid open; 3, scale of corolla; 4, very young nutlets; 5, ripe fruit:—*All enlarged.*

Tab. 7521.

HEMIPILIA amethystina.

Native of Burma.

Nat. Ord. Orchideæ.—Tribe Ophrydeæ.

Genus Hemipilia, *Lindl.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 628.)

Hemipilia *amethystina*; folio sessili terræ appresso ovato-cordato subacuto apice decurvo pallide flavo-viridi maculis pallide brunneis submarmorato, scapo gracili vaginis 2 linearibus instructo rachique racemi viridibus fusco-rubro punctulatis, racemo laxo multifloro, bracteis ovato-lanceolatis ovariis æquilongis brevioribusve, sepalis ovato-oblongis obtusiusculis viridibus, petalis oblongis apicibus rotundatis amethystinis, labello obovato apice dilatato breviter 4-lobo marginibus undulatis albis, disco amethystino basin versus puberulo breviter bicarinato, calcare sepalis æquilongo corniformi obtuso compresso, columna brevi, rostello porrecto trullæformi recurvo, staminodiis glandulæformibus, polliniis dorso infra medium alatis.

H. amethystina, *Rolfe in Herb. Kew.*

Only three species of *Hemipilia* have hitherto been recorded, *H. cordifolia*, Lindl., of the Western Himalaya, *H. flabellata*, Franch. and Sav., *H. Henryi*, Reichb. f., both of Western China, and *H. calophylla*, Parish and Reichb. f. (see Tab. 6920) a native of Moulmein. From the first of these *H. amethystina* differs in the shape of the lateral sepals and lip, and in the longer spur; and from *H. calophylla* in the broad, deeply cordate leaf, stouter scape, many-fld. raceme, and smaller flowers.

Mr. Rolfe informs me that *H. amethystina* was introduced with *Cypripedium Charlesworthii*, from the Shan States of Eastern Burma, by Messrs. W. L. Lewis & Co., of Southgate, to whom the Royal Gardens, Kew, are indebted for the specimen here figured, which flowered in June of the present year in a stove.

Descr.—Glabrous. *Leaf* four by two and a half inches, ovate, subacute, deeply cordate, horizontal, appressed to the ground, seven-nerved, pale yellow-green, blotched or almost marbled with pale brown irregular spots, tip decurved. *Scape* with the raceme eight inches long, slender, dark green speckled and streaked with red-brown; sheaths

two or three, linear-lanceolate, appressed to the scape, and coloured like it. *Raceme* many- and lax-flowered; bracts ovate-lanceolate, as long as the ovaries or longer; ovaries half an inch long, erecto-patent. *Flowers* half an inch across the lateral sepals, and about as long from the base of the dorsal sepal to the tip of the lip. *Lateral sepals* ovate-oblong, obtuse, green, spreading; dorsal smaller, erect. *Petals* oblong, erect, white, tip obtuse, amethyst purple. *Lip* about half an inch long, cuneately-obovate from a broad base, side lobes obscure; terminal rather dilated, shortly 4-lobed, margins white, undulate; disk amethystine, puberulous towards the base, with two short obscure ridges; spur laterally flattened, white, obtuse, brown, about as long as the sepals. *Column* short, stout, with prominent sides; rostellum prominent, trowel-shaped, upcurved, with deflexed sides; staminodes represented by two sessile glands; anther suberect, with the cells incurved below. *Pollinia* pyriform, pedicel produced into a dorsal wing along the lower half; glands small.—*J. D. H.*

Fig. 1, Front view of flower, with the sepals, petals, and half the lip removed; 2, side view of the same; 3 and 4, pollinia;—*All enlarged.*

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Tab. 7522.

WISTARIA chinensis, *var.* multijuga.

Introduced from Japan.

Nat. Ord. Leguminosæ.—Tribe Galegeæ.

Genus Wistaria, *Nutt.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 499.)

Wistaria chinensis, *DC. Prodr.* vol. ii. p. 390. *Bunge Enum. Pl. Chin. bor.* p. 20.

W. Consequana, *Loud. Hort. Brit.* p. 315. *Paxt. Mag. Bot.* vol. vii. p. 127.

Glycine sinensis, *Sims Bot Mag.* t. 2083. *Bot. Reg.* t. 650.

Var. *multijuga*, nob.; foliis longioribus, foliolis ad 8–10 jugis majoribus, racemis duplo longioribus laxifloris, floribus fere duplo minoribus, legumine 3–7-pollicari.

W. multijuga, *Van Houtte Fl. des Serres*, vol. xix. (1869–70) p. 126, t. 2002.

W. ? floribunda, *DC. l. c.*

W. chinensis, *Sieb. & Zucc. Fl. Japon.* vol. i. p. 90, t. 44.

Glycine floribunda, *Willd. Sp. Pl.* vol. iii. p. 1066.

Dolichos polystachyos, *Thunb. Fl. Jap.* p. 281 (*in part, excl. Syn. Linn.*).

Too vulgo Fudsi, *Kœmpf. Amœn. Acad.* fasc. v. p. 856.

There are two very different-looking plants known as *Wistaria chinensis*; one, that upon which De Candolle founded the species, is an undoubted native of China. The other doubtfully referred to the genus, was founded also by De Candolle on the badly * described *Dolichos polystachyos*, Thunb., as *W.* ? *floribunda*, which has hitherto been known only in Japan, as a cultivated plant reported to have been introduced from China. To this last is, I think, clearly referable the *W. multijuga*, Van Houtte, not only because of its country, but because Thunberg describes it as having a very long raceme (*racemis longissimis*), a term which can hardly be applied to the raceme of *W. chinensis* proper, but which is singularly applicable to var. *multijuga*. Siebold and Zuccarini cite *W.* ? *floribunda*, as a synonym

---

* In his diagnosis Thunberg says of the pedicels that they are geminate; but in the description following that they are scattered opposite and alternate. Then as regards the legume, he describes it as either glabrous or pubescent, probably confounding the pod of *W. japonica* with that of *chinensis*.

March 1st, 1897.

of *W. chinensis*. Their figure is an admirable representation of the variety.

The genus *Wistaria*, as at present constituted, appears to me to want reconsideration, for I feel sure that had Bentham, when describing it, either seen fruits of *W. chinensis*, or the figure of that organ in Siebold & Zuccarini's Flora, he would not have retained it in the same genus with the American *W. speciosa* without remark, if at all. *Wistaria* was founded by Nuttall in 1818 on *Glycine frutescens*, Linn., a plant of which the pods are correctly described in the "Genera Plantarum" as elongate, torulose, with hardly coriaceous convex valves, and reniform seeds. On the other hand, the pods of *W. chinensis* are of a totally different character, being oblanceolate, flattened, narrowed from the upper third or higher to the base, with rigid plane, thinly woody valves, densely velvety without and puberulous within; and the seeds are orbicular and flattened. On the other hand, there is what I regard as a true *Wistaria* of the American type in Japan, namely, *W. japonica*, Sieb. & Zucc. (l. c. p. 88, t. 43), with cylindric glabrous torulose thin-valved pods, and small turgid seeds. This plant, however, A. Gray refers to the neighbouring genus *Millettia* (Mem. Amer. Acad. N. S. vol. vi. (1859) p. 386), and Bentham (Gen. Plant. l. c.) regards it as intermediate between *Wistaria* and *Millettia*, the latter a badly circumscribed genus, to which *W. chinensis* may possibly prove referable. Should, however, it prove advisable to refer *W. chinensis* to a genus independent of both the American *Wistaria* and of *Millettia*, the choice of names for each may give rise to controversy, for Rafinesque's *Kraunhia frutescens* in Med. Repos. N. York, vol. v. (1808) 352, is ten years earlier than Nuttall's *Wistaria*. In this case I would suggest, as requiring the smallest change, the resumption of *Kraunhia* for Nuttall's plant, and adopting *Wistaria*, DC. non Nutt., for *W. chinensis*.

W. chinensis true is apparently a common plant in N. China, whence it was brought to this country in about 1881 by a Captain Welbank, and first figured in this work. There are many indigenous specimens in the Kew Herbarium; from Bunge collected on mountains N. of Pekin; from rocks and ruins of the Summer Palace, and from

throughout the district of Ningpo from W. Hancock, Esq., F.L.S.; and from Ichang, Dr. Henry. There are also cultivated specimens from Hong Kong; and from Nagasaki in Japan. Of var. *multijuga* there are Japanese specimens from Maximovicz (cult.), and Dr. Albrecht, and from Nagasaki, Oldham. The specimen here figured was from a plant obtained in 1874 from M. Van Houtte, which flowered in the Arboretum of the Royal Gardens in May, 1896.

Descr.—A luxuriant, woody, branched climber, the branches attaining many yards in length; bark brown. *Leaves* eight to twelve inches long, young silkily hairy, old nearly glabrous; petiole slender, swollen at the base, subterete; leaflets eight to ten pairs, ovate-lanceolate, acuminate, membranous, pale green; stipules ovate-lanceolate; stipellæ subulate. *Racemes* two feet long and more, pendulous; rachis slender, nearly glabrous, lax-flowered; pedicels about an inch long, slender; bracts obsolete. *Flowers* when expanded about an inch long from the tip of the standard to that of the keel. *Calyx* shortly campanulate, pubescent, green and purple, five-toothed, dorsal tooth subulate, rather longer than the triangular lateral, anterior teeth confluent in a very short two-toothed lip. *Standard* orbicular, one half to two-thirds of an inch in diam., very pale violet, yellow towards the notched base, where there is a bifid tubercle. *Wing-petals* about a third shorter than the standard, obovate-oblong, violet-blue, tip rounded, base excised with a cusp, claw slender. *Keel-petals* shorter than the wings, obovate, almost hatchet-shaped, violet-blue, base narrow rounded. *Anthers* minute. *Ovary* pubescent. *Legume* four to nine inches long, suboblanceolate, flattened, narrowed from the upper third to the base, top acute or cuspidate; valves thinly woody, clothed externally with a dense brown velvety pubescence, internally with a thin puberulous white corky layer, twisted after dehiscence, margins not thickened. *Seeds* one half to three-fourths of an inch in diameter, orbicular, flattened, dark brown, smooth.—*J. D. H.*

Fig. 1, Flower with petals removed; 2, base of standard; 3, wing-petal; 4, keel-petal; 5, ovary:—*All enlarged.*

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Tab. 7523.

HOLOTHRIX orthoceras.

Native of South Africa.

Nat. Ord. Orchideæ.—Tribe Ophrydeæ.

Genus Holothrix, *Rich.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 623.)

Holothrix *orthoceras*; foliis 2 sessilibus ovatis orbicularibus cordatisve patenti-recurvis supra luride viridibus nervis albidis trabeculatis, scapo ovarioque piloso apice multifloro, floribus subsecundis, bracteis ovato-lanceolatis ovarium subæquantibus, sepalis erectis ovato-lanceolatis acuminatis glaberrimis, lateralibus basi labello adnatis, petalis erectis quam sepala ter longioribus lanceolatis caudato-acuminatis puberulis, labelli ampli puberuli lobis lateralibus parvis obtusis recurvis, terminali subquadrato antice truncato 3–5-dentato, dentibus obtusis intermedio paullo longiore, calcare limbo æquilongo v. breviore gracili stricto, columna brevissima, anthera hemispherica.

H. orthoceras, *Reichb. f. Otia Bot. Hamburg.* p. 119.
Tryphia orthoceras, *Harv. Thes. Cap.* vol. ii. p. 14, t. 105.

The genus *Holothrix*, now for the first time figured in this magazine, is a large South African one, containing about thirty known species, a few of which are tropical African, three having been found as far north as Abyssinia. Mr. Bolus in his "Orchids of the Cape Peninsula" (p. 113) describes six as natives of that region. *H. orthoceras* is closely allied to *H. Lindleyana*, Reichb., also a native of Eastern South Africa, which differs, amongst other characters, in the involute spur. There is a good sketch of a clump of *H. Lindleyana* in the *Gardener's Chronicle*, 1888, vol. i. fig. 55, 56.

In the above mentioned work Mr. Bolus describes the petals and lip of *Holothrix* as always glabrous, but they are decidedly, though very minutely, puberulous in *H. orthoceras*.

H. orthoceras, though not hitherto found in the Cape Peninsula, has a wide distribution in South Africa, from the South Western districts of Uitenhage and Albany, northward to Natal and the Transvaal, whence tubers were presented to the Royal Gardens, Kew, by Mrs. Deglon of Barberton. These were received in June, 1895, im-

bedded in a tuft of *Asplenium cuneatum*. The leaves were developed in January of the following year, and the flowers in March. The lip probably varies in the lobing, for the middle lobe is figured by Harvey as only trifid.

Descr.—*Leaves* two, radical, equal, about two inches long, spreading and recurved, ovate, acute, glabrous, above dull green and trabeculate with white nerves, beneath pale green with a stout costa. *Scape* four to five inches high, slender, pale red-brown, and with the ovaries softly laxly hairy. *Spike* three inches long, erect; flowers very many, half an inch long, rather crowded, subsecund, white, with a few red-purple streaks on the lip. *Bracts* as long as the ovary, lanceolate, all green, or tipped with red. *Sepals* erect, ovate-lanceolate, long-acuminate, glabrous; lateral adnate to the base of the lip. *Petals* half as long again as the sepals, erect, ovate-lanceolate, caudate-acuminate, puberulous. *Lip* twice as long as the sepals, broad, decurved, puberulous; side-lobes small, linear-oblong, obtuse, recurved; midlobe quadrate, anterior margins three to five-toothed, with the mid-tooth longest; spur shorter than the ovary, straight, slender. *Column* very small, low; anthers horizontal, incurved.—*J. D. H.*

Fig. 1, Front and 2 side view of the flower; 3, column and base of perianth; 4, pollinium:—*All enlarged.*

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Tab. 7524.

GREVILLEA Hilliana.

Native of Eastern Australia.

Nat. Ord. Proteaceæ.—Tribe Grevillieæ.

Genus Grevillea, *Br.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 180.)

Grevillea (Cycloptera) *Hillii*; arborea, ramulis tomentellis, foliis petiolatis supra glabris penninerviis et reticulatis subtus argenteo-sericeis, inferioribus elongatis 2–3-lobis pinnatifidisve lobis 3-5 elongatis obtusis, superioribus integris lineari-oblongis oblanceolatisve, racemis spiciformibus elongatis cylindraceis multi-densifloris, rachi pedicellisque brevibus puberulis, floribus parvis albo-virescentibus, perianthii ¼ poll. longi subsericei tubo breve lobis revolutis, toro recto, glandula semi-annulari, ovario stipitato glabro, stylo gracili, stigmate sublaterali, capsula pollicari ellipsoidea acuta paullo compressa lævi, seminibus ambitu anguste alatis.

G. Hilliana, *F. Muell. in Trans. Phil Inst. Victoria*, vol. ii. (1858) p. 72. *Benth. Fl. Austral.* vol. v. p. 463. *Bailey Cat. Queensland Plants*, p. 40; *Synops. Queensland Flor.* p. 487. *Maiden, Useful Native Pl. Austral.* p. 355.

Grevillea is the largest genus of Australian *Proteaceæ*, and the second largest of Phenogams in that continent, where it is surpassed in numbers by *Acacia* alone, which contains 313. There are 156 species of *Grevillea* in Bentham's "Flora Australiensis" (1870), and in Mueller's last "Census of Australian Plants" (1889) there are 161. The only extra Australian members known are a few from New Caledonia, and one from New Guinea. As with so many large genera, it is difficult of subdivision into well defined groups, though the species are in the whole remarkably constant, and their synonymy is more due to misnomers and duplication of names than to the erecting of varieties into species. In this respect, as well as in the limitation of the species by brief diagnoses, *Grevillea* compares favourably with *Eucalyptus*, as is evidenced by a comparison of the spaces required for the diagnoses of the species of those genera respectively in Bentham's Flora. In that work *Grevillea*, with 156 species, occupies only eight pages, whilst *Eucalyptus* with only 124 species occupies ten and a half.

G. Hilliana is the twentieth species figured in this

magazine. Unlike its congeners, which are, as a rule, local, it extends along the Eastern coast of the continent, from the Clarence River in New South Wales (lat. 29½°), to Rockingham Bay in Queensland (lat. 18° S.) a distance, following the coast line, of nearly 900 miles. The specimen here figured was contributed by T. Hanbury, Esq., F.L.S., from his garden at the Palazzo Orengo, Ventemiglia, in July of last year. There is a plant of it in the Temperate House of the Royal Gardens, Kew, eight feet in height.

In Australia it is known as the Silky Oak, and its timber is durable, beautifully grained, and useful for cabinet work. The name, Silky Oak, is (according to the Official Guide to the Timbers in the Kew Museum, 1893) also given to *G. robusta*, *Orites excelsa*, and *Stenocarpus salignus*.

Descr.—A large tree, attaining seventy feet in height, branchlets minutely tomentose, pale reddish brown. *Leaves* very variable, all petioled, bright green above, and glabrous, with pinnate nervation, silvery silky beneath, the lower on the branches up to a foot long, usually broadly obovate in outline, tapering below the middle into a narrowly cuneate base, above it 3-lobed, or pinnatifid, with about five broadly linear obtuse lobes, three to five inches long, by half an inch or more broad, of which the terminal is the largest; uppermost leaves undivided, four to six inches long, obtuse or subacute. *Flowers* small, in a cylindric, spiciform, erect, slightly curved pale green, very dense-flowered raceme, six to eight inches long, and one to one and a half inches in diameter; rachis and pedicels pubescent. *Perianth* appressed silky, about one-fourth of an inch long, with a short tube and revolute lobes. *Anthers* small, didymous. *Disk* semi-annular. *Ovary* stipitate, glabrous; style slender, incurved; stigma discoid, sublateral. *Capsule* one to one and a quarter of an inch long, ellipsoid, acute, somewhat compressed laterally, quite smooth. *Seeds* orbicular, narrowly winged all round.—*J. D. H.*

Fig. 1, Flower; 2, two lobes of perianth; 3, section of ovary and disk:—*All enlarged*; 4, fruit *of the natural size* (from Herbarium specimen).

M S. del. J.N. Fitch lith

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Tab. 7525.

DENDROBIUM sarmentosum.

Native of Burma.

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Dendrobium, *Swartz*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 498.)

Dendrobium (Stachyobium) *sarmentosum*; caulibus gracilibus elongatis ramosis pendulis, internodiis 1–1½-pollicaribus teretibus cylindraceis vaginis albidis tectis, nodis non incrassatis, foliis deciduis 2-pollicaribus elliptico-oblongis obtusis, floribus ad nodos solitariis v. 2–3 pedunculo brevi confertis 1-poll. latis albis labello basi roseo striato, bracteis ovato-oblongis, sepalis ovatis apice rotundatis, dorsali angustiore, petalis sepalis lateralibus consimilibus sed paullo latioribus, mento corniforme recurvo virescente, labello sepalis æquilongo v. paullo longiore late oblongo obtuso, lobis lateralibus parvis rotundatis, intermedio disco villoso, anthera subdidyma marginibus erosis.

D. sarmentosum, *Rolfe in Orchid. Rev.* vol. iv. (1896) p. 72.
D. fragrans, *Hortul.*

Though differing in many respects from the type of the section *Stachyobium*, and especially in the lateral subsessile few-fld. inflorescence, I am disposed to follow Mr. Rolfe in placing this species in that group, and near to *D. barbatulum*, Lindl. (see tab. 5918), and *D. Fytcheanum* (tab. 5444, under the name of *barbatum*). It differs from both these species in the long, very slender branched stems, but agrees in the hairy disk of the flat lip, and the minute coloured lateral lobes of the latter. The colour of the lip appears to be variable, for Mr. Rolfe describes its side lobes as pale green, with light brown radiating nerves.

D. sarmentosum is a native of the Shan States of Upper Burma, where it was discovered by Mr. R. Moore, when Officiating Assistant Superintendent of the Upper Shan States, who alludes to it in a very interesting paper contributed to the *Orchid Review* (vol. iii. (1895) p. 171) on the Orchids of those states as one of thirty-five Orchids (eighteen of them *Dendrobia*) occurring within a radius of thirty miles round Lake Inle.

It first flowered in the collection of Messrs. W. L. Lewis & Co. early in 1895. The specimen here figured

was received at the Royal Gardens, Kew, in 1895, from Mr. Curtis, F.L.S., Superintendent of the Botanic Gardens and Plantations of Penang, who had received it from Burma. It flowered in the Orchid House in February, 1896, and the leaves were perfected in the following May. The flowers were deliciously violet-scented.

Descr.—*Stems* very slender, eighteen inches long and upward, by one-tenth to one-eighth of an inch in diameter, pendulous, branched; branches elongate; internodes one to one and a half inches long, clothed throughout their length with the white appressed old leaf-sheaths; nodes hardly enlarged, often rooting. *Leaves* produced before the flowers, one to two inches long, oblong, obtuse, bright green, coriaceous, nerves obscure. *Flowers* from the upper nodes of the branchlets, solitary, or two or three together on a very short peduncle, very shortly pedicelled, about an inch in diameter, white, with the side-lobes and base of the mid-lobe of the lip golden yellow, the side-lobes streaked with red; bracts small, ovate. *Sepal* and *petals* spreading, of nearly equal length, ovate-oblong, tips rounded; dorsal sepal rather the narrowest, and petals rather broader, and more oblong than the sepals. *Lip* a little longer than the sepals, lateral lobes small, rounded, incurved; terminal broadly ovate-oblong, tip rounded or subacute, disk minutely villous; mentum produced into a recurved spur as long as the lip. *Anther* two-lobed at the top, margins erose.—*J. D. H.*

Fig. 1, Ovary and lip; 2, column; 3, anther; 4, pollinia:—*All enlarged.*

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Tab. 7526.

DIDYMOCARPUS MALAYANA.

Native of Penang?

Nat. Ord. Gesneraceæ.—Tribe Cyrtandreæ.

Genus Didymocarpus, *Wall.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 1022.)

Didymocarpus (Heterobæa) *malayana*; acaulis, cæspitosa, foliis radicalibus breviter petiolatis ovatis obtusis basi rotundatis cordatisve utrinque sericeo-pilosis flavo-viridibus subtus pallidis nervis utrinque costæ 6–8 arcuatis, scapis gracilibus laxe patentim pilosis apicem versus 2–4-floris, floribus breviter pedicellatis nutantibus, bracteis parvis oblongis obtusis, calycis 5-partiti laciniis linearibus obtusis pubescentibus, corollæ 1½-pollicaris extus pubescentis tubo subdecurvo in faucem longiorem infundibularem gibboso-inflatam producto, limbi subbilabiati lobis rotundatis subæqualibus patulis aureis, staminibus inclusis filamentis curvis glaberrimis, antheris scutiformibus cohærentibus, connectivo dorso 2-corniculat, staminodiis 3 minutis papillæformibus, disco breviter cylindraceo, ovario angusto styloque toto elongato glanduloso-pubescentibus, stigmate capitato, capsula 1½-pollicari anguste lineari fere recta, valvis ad basin liberis.

D. malayana, *Hook. f.* in *Gard. Chron.* (1896) vol. ii. p. 123, fig. 24.

A beautiful member of a large Eastern Asiatic genus which contains, including one doubtful Madagascar plant seventy-two species, according to Clarke's Monograph of the *Cyrtandreæ* (in Alph. DC. Monogr. Phanerog. vol. v. pt. I.) to which must be added, besides that here figured, seven Malayan species described by Mr. Ridley in the Transactions of the Linnæan Society, Ser. II. vol. iii. (1893) p. 328, and twelve in the Journal of the same Society, vol. xxxii. (1896) p. 505. *D. malayanas* belongs to the section *Heterobæa* of Bentham (Gen. Plant. l. c. 1022) characterized by the five narrow calyx segments, subventricose elongate corolla, two stamens with coherent anthers, a cupular disk, and few-flowered scapes. It differs, however, from all the previously described plants of that section in being stemless. Its nearest ally is probably *D. crinita*, Jack, (Tab. 4554) also a native of Penang, with which it agrees in the form of the corolla, and in the connective of the anthers being provided with two similar but much shorter projections. In other

respects, and especially in habit, the two plants widely differ, *D. crinita* being an erect caulescent species, clothed with shaggy purple hairs, and having oblanceolate, strongly serrate leaves, purple beneath. The character of the connective common to these two species is found in a few others, notably in the Himalayan *D. aurantiaca*, Clarke.

The fine specimen of *Didymocarpus malayana* here figured was sent to Kew by Messrs. Veitch in June of last year, with the information that it was received by Mr. Curtis, F.L.S., Assistant Superintendent of Gardens and Forests in that island, of which I assume it to be a native, but it may have come from a neighbouring region.

Descr.—Densely tufted, softly pubescent. *Leaves* spreading from the root, crowded in unequal pairs, two to three inches long, shortly stoutly petioled, broadly ovate, tip rounded, base rounded or subcordate, upper surface pale yellow-green, lower still paler, both surfaces and margins villous with appressed silky white hairs; nerves six to eight pair, arched, raised beneath. *Scape* two and a half to three inches high, slender, softly hairy, three- to four-flowered towards the summit; pedicels very short; bracts as long or longer than the pedicels, oblong, obtuse. *Flowers* nodding or drooping, about two inches long. *Sepals* one-third to one half an inch long, linear, obtuse, pubescent. *Corolla* with a slender terete tube, dilating into an infundibular-campanulate ventricose throat, pale straw-coloured and pubescent externally; limb an inch in diameter, subbilabiate, of five nearly equal orbicular golden-yellow spreading lobes. *Stamens* inserted at the top of the corolla-tube, included in the throat; filaments sigmoidly curved, quite glabrous; anthers scutelliform, coherent by their faces, connectives with two divergent short horns; staminodes three, minute. *Disk* shortly cylindric. *Ovary* narrow and long included straight style glandular-pubescent, stigma capitellate. *Capsule* one and a half inch long, very slender, straight, valves free to the base.—*J. D. H.*

Fig. 1, Calyx and style; 2, lower half of corolla laid open with stamens and staminodes; 4, ovary and disk; 5, transverse section of ovary;—*All enlarged*; 6, capsule of the *nat. size*.

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TAB. 7527.

AGAVE HASELOFFII.

Native of Mexico.

Nat. Ord. AMARYLLIDEÆ.—Tribe AGAVEÆ.

Genus AGAVE, *Linn.*; (*Benth. et Hook. f. Gen. Plant.* vol. iii. p. 738.)

AGAVE (Littæa) *Haseloffii*; acaulis, foliis 30–40 dense rosulatis lanceolatis viridibus subcarnosis ad basin vix angustatis spinâ terminali haud pungente aculeis marginalibus parvis crebris deltoideis apice corneis nigris, pedunculo valido arcuato bracteis multis adpressis prædito, floribus geminis sessilibus, in spicam densam dispositis, bracteis propriis magnis scariosis linearibus basi deltoideis, ovario oblongo, perianthii tubo brevi campanulato, lobis oblongis brunneo-viridibus, staminibus lobis 4–5-plo. longioribus, antheris linearibus parvis, stylo demum antheras superante.

A. Haseloffii, *Jacobi Monogr. Agav.* (1864) p. 244; *in Hamb. Gartenzeit*, vol. xxii. (1866) p. 220. *Baker in Gard. Chron.* 1877, p. 683; *Handb. Amaryllid.* p. 189.

This Agave belongs to the section *Aloideæ*, in which the leaves are more fleshy, and not rigid in texture as in the better known *Americanæ* and *Rigidæ* and the marginal prickles always numerous and minute. The species of this group are comparatively rare in cultivation. The present plant has been grown at Kew for many years, but flowered for the first time in the summer of 1895. The species was originally described by Jacobi in 1864, and was named by him after the gentleman in whose garden he saw it.

Descr.—*Leaves* thirty to forty, in a dense sessile rosette, lanceolate, rather soft, and not very thick in texture, a foot and a half or two feet long, three inches broad at the middle, very little narrowed towards the base, pale bright green, the end spine not horny nor pungent, the marginal prickles very close and small, tipped with black. *Peduncle* arising from the base of the rosette of the leaves, stout, arcuate, three feet long, with numerous ascending bract leaves, the upper scariose and long-pointed. *Flowers* in sessile pairs, forming a dense spike, which is five or six inches in diameter when they are fully expanded; bracts

large, scariose, linear from a dilated base. *Ovary* green, oblong, an inch long. *Perianth-tube* very short, campanulate; lobes of the limb oblong, greenish-brown, half an inch long. *Stamens* above two inches long, inserted at the throat of the perianth-tube; anthers linear, small. *Style* finally overtopping the stamens.—*J. G. Baker.*

Fig. 1, Edge of leaf; 2, complete flower, cut open; 3, front view of anther; 4. back view of anther; 5, apex of style, *all more or less enlarged*; 6, whole plant *much reduced.*

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Tab. 7528.

GENTIANA TIBETICA.

Native of the Eastern Himalaya.

Nat. Ord. Gentianeæ.—Tribe Swertieæ.

Genus Gentiana, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 815.)

Gentiana (Pneumonanthe) *tibetica;* glaberrima, caule sesquipedali robusto folioso, foliis 6–18 pollicaribus basi in vaginam cylindricam per paria connatis lanceolatis acuminatis crasse coriaceis supremis confertis quasi verticillatis marginibus undulatis, sub septemplinerviis supra laete viridibus subtus pallidis, floribus in axillis supremis confertis subsessilibus pollicaribus, calycis tenuiter membranacei spathacei tubo brevi ore truncato 5-denticulato, corollæ calyce duplo longioris tubo cylindraceo paullo inflato pallide plumbeo-purpureo, limbi 5-fidi lobis ovatis pallidis fauceque rubro-punctulatis sinubus plica brevi simplici triangulari instructis, glandulis nectariferis 0, filamentis inclusis basi puberulis, antheris parvis, ovario sessili oblongo, stylo brevi, stigmatibus linearibus, capsula sessili ellipsoidea inclusa, seminibus reticulatis exalatis.

G. tibetica, *King in Hook. Ic. Pl.* t. 1441. *Hook. f. Fl. Brit. Ind.* vol. iv. p. 733.

A tall, robust Gentian, placed in the section *Chondrophyllum* in the "Icones Plantarum" where it was first described, but falling under *Pneumonanthe* in Clarke's arrangement of the Indian species (in the "Flora of British India") where the latter section is distinguished from the former by the reticulate testa of the seeds. Its nearest ally is *G. robusta*, King (l. c. t. 1439) which has narrower leaves, linear teeth on the margin of the calyx-tube, and a long style. These two differ from all other Himalayan species (except *G. stylophora* which attains six feet) by their size and robustness. They both inhabit elevations of about 11,000 feet in a remote triangular corner of the interior Himalaya, bordering Tibet, between Sikkim and Bhotan, called Chumbi; a region remarkable for its dry climate, being cut off by lofty ranges from the southerly rain-bringing winds. Owing to its climate not a few plants unknown in Sikkim have been found in Chumbi; notably *Pinus excelsa*, and more may be expected when it shall be visited by Europeans, who have up to the

present time been jealously excluded by the Tibetan authorities. Hitherto its botany is known only through native collectors, who have been sent there from Darjeeling under Dr. King's authority, and who thus obtained both seeds and dried specimens. On a ticket attached to the latter the corolla is said not to be epunctate, but it is decidedly dotted in the specimen here figured.

G. tibetica has been in cultivation in Europe previous to 1883, at which date flowering specimens were sent to the Royal Gardens by Herr Max Leichtlin, and are preserved in the Herbarium. It has been in cultivation in the open air at Kew for some years, from seeds sent from the Royal Botanic Gardens, Calcutta. It flowers in July.

Descr.—*Stem* very stout, eighteen inches high and upwards, fistular? stout, erect, unbranched, leafy to the tip. *Leaves* up to eighteen inches long, by four broad, lanceolate, acuminate, very thick and leathery, bases of opposite pairs connate, margins undulate, channelled in the upper bright green surface by five to seven pairs of nearly parallel sunken nerves, midrib beneath very stout. *Flowers* crowded in the axils of the crowded upper leaves, shortly stoutly pedicelled; bracts small, lanceolate. *Calyx* short, membranous, tubular, splitting to the base on one side, truncate, the mouth minutely five-toothed. *Corolla-tube* nearly an inch long, more than twice as long as the calyx, slightly inflated; lobes a quarter of an inch long, ovate, dull straw-coloured, speckled with black; folds in the sinus short, acute. *Stamens* included; anthers linear-oblong. *Ovary* subsessile, ovoid-oblong, with short, recurved styles. *Capsule* dehiscing at the tip. *Seeds* ellipsoid; testa reticulated, not winged.—*J. D. H.*

Fig. 1, Flower with the corolla closed; 2, corolla laid open; 3, stamen; 4, ovary;—*All enlarged.*

M S del J N Fitch lith

Tab. 7529.

TRISTANIA laurina.

Native of Eastern Australia.

Nat. Ord. Myrtaceæ.—Tribe Leptospermeæ.

Genus Tristania, *Br.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 708.)

Tristania (Eutristania) *laurina*; ramulis foliisque novellis sericeis, foliis alternis breviter petiolatis lanceolatis obovatis- v. oblongo-lanceolatis obtusis acutis acuminatisve subcoriaceis penninerviis basi angustatis, supra laete viridibus, subtus pallidis primum sericeis demum glabris costa valida, nervis perplurimis, cymis axillaribus breviter valide pedunculatis, pedicellis calyce paullo longioribus, bracteis parvis deciduis, calycis semisuperi campanulati pubescentis lobis triangularibus, petalis parvis ellipticis aurantiacis, staminum phalangibus brevibus polyandris, ovarii vertice hemispherico hirsuto, capsula parva subglobosa infra medium hemispherica, vertice in valvulas 3 obtusas hiantes dehiscente, seminibus oblongis.

T. laurina, *Br. in Ait. Hort. Kew Ed. II.* vol. iv. p. 417. *DC. Prodr.* vol. iii. p. 211. *F. Muell. Fragment.* vol. i. p. 81. *Benth. Fl. Austral.* vol. iii. p. 264. *Bailey, Synop. Queensland Flor.* p. 182. *Maiden, Useful Nat. Pl. Austral.* p. 609.

Melaleuca laurina, *Sm. in Trans. Linn. Soc.* vol. iii. (1797) p. 275.

Tristania laurina is remarkable both for its great variability in habit, and for its wide range in distribution. In form it passes from that of a scrubby bush in dry places, to a stately tree seventy feet high with a trunk one to two ft. diam. in moist forests; whilst in geographical distribution it ranges from the temperate regions of Gipps' Land in latitude 38° S., to the subtropical in Moreton Bay, lat. 27° S. The wood is described by Maiden l. c. as hard, close-grained, dark colrd., and difficult to season, and is used for tool-handles, cog-wheels, &c. It has various colonial names, "Bastard Box," "Swamp Mahogany," "Water Gum," and "Beech."

The genus *Tristania* is confined to Tenasserim, the Malayan Peninsula Islands, Eastern Australia, and New Caledonia. It contains about twenty species, of which *T. laurina* is the most southern. Only one has been previously figured in this magazine, *T. neriifolia*, of New

South Wales (Tab. 1058 *Melaleuca*), which belongs to a different section of the genus, having opposite leaves. The specimen here figured of *T. laurina* was communicated by Mr. Hanbury from the Mortola Gardens in July, 1896. A plant of it has been for many years in cultivation in the Royal Gardens of Kew, and is now in the Temperate House, where it flowers occasionally.

Descr.—A shrub, or small or large tree, attaining seventy feet in height; branchlets and young leaves and old leaves beneath at first, clothed with silky appressed hairs; branchlets and petioles stout, red-brown. *Leaves* very variable, three to four inches long, from lanceolate to oblong-lanceolate or obovate-oblong, obtuse, acute or acuminate, dark green above, very pale beneath; midrib stout; nerves very numerous and slender; base narrowed into a short stout petiole. *Flowers* orange-yellow, in small, shortly stoutly petioled axillary cymes, about one-third of an inch in diameter; pedicels short, stout; bracts very small, brown, caducous. *Calyx* turbinately campanulate, semi-superior, pubescent; lobes 5, triangular. *Petals* one-eighth to one-sixth of an inch long, elliptic, very shortly clawed. *Stamen* in five short bundles of about twenty each. *Ovary* with a hemispheric hirsute crown. *Capsule* small, obtusely three-valved above the middle.—*J. D. H.*

Fig. 1, Flower; 2, calyx lobes, bundle of stamens and petals; 3, anther; 4, base of calyx and ovary; 5, transverse section of ovary; 7, immature seed:—*all enlarged*; 6, fruiting cymes *of the natural size.*

M.S. del, J.N. Fitch lith.

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Tab. 7530.

GONGORA tricolor.

Native of Costa Rica.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Gongora, *Ruiz & Pav.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 549.)

Gongora *tricolor*; pseudobulbis ovoideis alte costatis interstitiis concavis, foliis ovato-oblongis acuminatis 5-costatis, racemi rachi compressa et angulata fusco-rubra, sepalis lateralibus reflexis ovato-lanceolatis acuminatis rubro-purpureis maculisque paucis pallidis variegatis, marginibus recurvis, costa pallida, sepalo dorsali ultra columnam lanceolato, sepalis lanceolato-subulatis incurvis apicibus setaceis, petalis parvis, labelli aurei hypochilio cuneiforme saccato a latere compresso basi dorso bituberculato apice truncato, angulis superioribus acutis infra apicem aristatis, epichilio hypochilio æquilongo infundibulari apice in rostrum recurvum produco, columna basique elongata sepali dorsalis rubro-punctatis.

Gongora tricolor, *Reichb. f. in Bonplandia*, vol. ii. (1854) p. 93; in *Walp. Ann.* vol. vi. p. 594.

G. maculata, *var.* tricolor; *Lindl. Bot. Reg.* vol. xxx. (1844) *Misc.* n. 40; et vol. xxiii. (1847) t. 69.

In systematic botany there is no more difficult task than that of accurately and intelligibly describing the floral organs of Orchids, and I think that the maximum of difficulty is reached in the case of *Gongora*. This arises from the confluence of the lower half (long claw) of the narrow dorsal sepal with the lower half of the long column into a pillar carrying the bases of the small subulate or horn-like petals adnate to it, almost to its summit; to the reflexion of the lateral sepals, which are quite unlike the dorsal; and to the complicated structure of the comparatively small lip, which is attached by a mere point to the summit of the ovary, and is directed backwards horizontally from the rest of the perianth. These characters give a dislocated appearance to flowers, the forms and relations of whose organs can hardly be understood without a good drawing. Add to these difficulties that of defining the shades of colours of the often parti-coloured floral organs, which in the case of Orchids is necessary for systematic purposes.

There are several tropical S. American Gongoras so closely allied to *G. tricolor* in every detail of the structure

of the lip, that intermediates between some or all may be expected to occur. Of these the type is *G. quinquenervis*, Ruiz & Pav., which, according to Reichenbach, is a widely distributed species from Guatemala to Peru and Guiana, and for which that author cites (in Walp. Ann. l. c. 595), *G. maculata*, Lindl. Bot. Reg. t. 1616; Bot. Mag. t. 3687; *G. fulva*, Bot. Reg. vol. xxv. (1839) t. 51; *G. maculata*, var. *alba*, Bot. Reg. vol. xxvii. (1841) Misc. n. 101, and *G. bufonia*, var. *leucochila*, Bot. Reg. (1847) t. 17 as synonyms.

The specimen of *G. tricolor* here figured was received at the Royal Gardens, Kew, in September, 1894, from Mr. R. Pfau, of San Jose, Costa Rica. It flowered in the warm Orchid House in February, 1896.

Descr.—*Pseudobulbs* ovoid, two to two and a half inches long, deeply sulcate, with about six obtusely keeled ribs and rounded interstices. *Leaves* six inches long, ovate-oblong, acuminate, deeply five-grooved above, with as many stout ribs beneath, bright green. *Raceme* pendulous, long-peduncled, six to ten inches long, lax-flowered; peduncle and rachis slender, pale green, speckled; rachis compressed and angled; bracts a quarter of an inch long, lanceolate; pedicel with ovary one and a half to two inches long, spreading and decurved, speckled like the rachis. *Flowers* about two inches long from the tip of the dorsal sepal to that of the lip. *Sepals* very unequal, dorsal narrow, adnate for half its length to the back of the column, the free portion as long as the adnate, lanceolate, margins revolute, tip recurved; lateral sepals reflexed, ovate-lanceolate, dull red-purple, with revolute margins, and a stout pale midrib. *Petals* adnate to the sides of the column for their lower halves, the free portions spreading and upcurved, lanceolate, acuminate, speckled. *Lip* golden-yellow, projecting horizontally; hypochilium cuneiform, saccate, truncate anteriorly, with acute angles and an awn on each side; base with two dorsal tubercles; epichichilium as long as the hypochilium, broadly funnel-shaped, with a spur-like speckled tip, base dorsally gibbous. *Column* slender, speckled.—*J. D. H.*

Fig. 1, Lip; 2, column and petals; 3, top of column and anther; 4, pollinia: —*All enlarged.*

M.S. del. J.N. Fitch lith.

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Tab. 7531.

SENECIO Smithii.

Native of South Chili and Fuegia.

Nat. Ord. Compositæ.—Tribe Senecionideæ.

Genus Senecio, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 446.)

Senecio *Smithii*; caule simplice herbaceo valde robusto fistuloso folioso foliisque amplis araneosis, foliis crassiusculis radicalibus petiolatis ovatis basi cuneatis cordatis bilobisve, apice obtusis acutisve grosse crenato-dentatis subtus nervosis costa crassa, petiolo crasso antice concavo basi dilatato vaginante, caulinis oblongis, capitulis in corymbos terminales basi foliosos valide pedunculatos dispositis, involucri campanulati calyculati araneosi bracteis angustis linearibus acutis viridibus, fl. radii ligulis numerosis brevibus v. elongatis linearibus 3-dentatis albis, styli ramis brevibus linearibus obtusis, fl. disci aureis 5-dentatis, styli ramis brevibus apice dilatatis, acheniis linearibus glaberrimis sulcatis, pappi setis achenio paullo longioribus subscaberulis.

S. Smithii, *DC. Prodr.* vol. vii. p. 316. *Hook. f. Fl. Antarct.* vol. ii. p. 316. *C. Gay, Fl. Chil.* vol. iv. p. 198.

S. verbascifolius, *Hombr. & Jacquin. Voy. au Pole Sud. Bot. Dicot. Phan.* t. 12.

Cineraria gigantea, *Smith, Exot. Bot.* vol. ii. p. ii. t. 65.

C. leucanthema, *Banks & Sol. mss. in Herb. Mus. Brit. cum Icone.*

Brachypappus? Smithii, *Schult. Bih. in Hohen. Pl. Lechler Magell. Exsicc.* n. 1238.

This noble *Senecio* was discovered in January, 1769, during Cook's first voyage, by Banks and Solander, when on their disastrous botanizing excursion in Good Success Bay in Tierra del Fuego. Since that time it has been collected by every naturalist who has visited the Straits of Magellan and western coast of South Chili, along which it extends as far north as the Island of Chiloe, according to a specimen so ticketed by Captain King in the Kew Herbarium. Quite recently it has been found in the Falkland Islands by Mr. A. Linney of the Government Gardens, Stanley Harbour, who sent seeds of it to Kew in 1895, describing it as a coast plant. It would be interesting to know which of the two Falkland Islands the plant inhabits, for not only is the flora of the group a singularly scanty one, but there is a botanical difference between the Eastern and Western Islands, exemplified by

the fact that the only true shrub in the flora, *Veronica elliptica*, Forst. (see Tab. 242, *V. decussata*, Ait.) has been found in the Western Island only (that nearest to Fuegia), where, as I have been informed, it is local, and confined to the Southern and Western coasts. It may be mentioned here that *V. elliptica* is one of the very few shrubs that is common to Chili, Fuegia, New Zealand, and the islands West and South of the latter.

Senecio Smithii varies a good deal in height, robustness, number of flower-heads, and length of the ray-flowers, which are sometimes very narrow and short. The specimen figured is of a plant raised from seeds sent by Mr. Linney in 1895, which grew vigorously, and flowered in an open border in June, 1896, and has attained three feet in height, with the stem as thick as the thumb.

Descr.—A robust perennial, green, leafy herb, three to four feet high, more or less clothed with a loose cobwebby indumentum. *Stem* as thick as the thumb below, and as the middle finger about the middle. *Lower leaves* eight to ten inches long, ovate or oblong, acute or obtuse, coarsely crenate-toothed, thickly leathery, pale green; base cuneate, rounded-cordate, or 2-lobed; midrib very stout below, with prominent nerves; petiole very stout, concave in front; upper leaves sessile, oblong. *Heads* many, in a leafy, terminal corymb, pedicels long or short, stout. *Involucre* one half to two-thirds of an inch long, campanulate; bracts very narrow, acute, green. *Ray-flowers* twenty to thirty, white, very variable, one-fourth to three-fourths of an inch in length, linear, tip three-toothed; style-arms short, linear. *Disk-flowers* yellow, 5-toothed; style-arms short, recurved, tips dilated. *Achene* about one-third of an inch long, very narrow, deeply grooved, glabrous; pappus rather longer than the achene, white, rather rough.—*J. D. H.*

Fig. 1, Ray-flower; 2, disk-flower; 3, pappus-hair; 4, stamens; 5, style-arms of disk-flowers; 6, achene; *all enlarged*; 7, whole plant *greatly reduced*.

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Tab. 7532.

AGAVE KEWENSIS.

Native of Mexico.

Nat. Ord. Amaryllideæ.—Tribe Agaveæ.

Genus Agave, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 738.)

Agave (Euagave) *kewensis*; breviter caulescens, foliis 30–40 laxe rosulatis oblongo-lanceolatis carnoso-coriaceis viridibus, spinâ terminali debili vix pungente spinulis marginalibus parvis deltoideis brunneis, pedunculo valido elongato foliis multis rudimentariis lanceolatis prædito, floribus in paniculam laxam dispositis, ramis patulis apice multifloris, pedicellis brevibus, bracteis parvis ovatis scariosis, ovario cylindrico, perianthio lutescente tubo brevi infundibulari, lobis ovato-lanceolatis, staminibus lobis 2–3-plo longioribus, stylo staminibus longiore.

A. kewensis, *Jacobi Monogr. Agave*, p. 242. *Baker in Gard. Chron.* 1897, vol. i. p. 68; *Handb. Amaryllid.* p. 242.

The present *Agave* belongs to the group with comparatively fleshy leaves, the species of which are less hardy and much rarer in cultivation than *A. americana*, *A. rigida*, and their allies. Of this group it is the finest and largest species which is known. When General Jacobi visited the Royal Gardens at Kew in 1865 he at once recognized it as a new and well-marked species, and shortly afterwards described it in his monograph under the name of *Agave kewensis*. It did not flower till 1895, and then proved to have the *americana* type of panicle. The plant did not perfect seed, and died after flowering, but the peduncle was cut and kept, and fortunately, as it was the only plant known, developed a number of bulbillæ after the flowers faded. These have been planted, and it is hoped that a number of young plants raised from them will shortly be ready for distribution.

Descr.—*Trunk* produced to a length of half a foot below the leaves. *Leaves* oblong-lanceolate, thirty or forty in a rather lax rosette, three or four feet long, seven or eight inches broad at the middle, narrowed gradually to four inches above the dilated base, bright green on both surfaces, concave on the face in the middle; end spine weak and scarcely pungent; marginal spinules

small, deltoid, brown. *Peduncle* fifteen feet long, accidentally forked in the present specimen, with many ascending lanceolate reduced leaves. *Inflorescence* laxly panicled, rather shorter than the peduncle; branches spreading, bearing a cluster of many flowers at the apex; pedicels short; bracts small, ovate, scariose. *Ovary* cylindrical, an inch long. *Perianth* yellowish; tube short, funnel-shaped; lobes ovate-lanceolate, ascending, nearly an inch long. *Stamens* more than twice as long as the perianth-lobes; anthers linear. *Style* overtopping the anthers.—*J. G. Baker.*

Fig. 1, Marginal spinules; 2, front view of anther; 3, back view of anther; 4, apex of style;—*all enlarged*; 5, whole plant, *much reduced*.

M.S. del, J.N.Fitch lith

Vincent Brooks, Day &

Tab. 7533.

MAXILLARIA Houtteana.

Native of Guatemala and Venezuela.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Maxillaria, *Ruiz & Pav.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 555.)

Maxillaria (Caulescentes) *Houtteana*; rhizomate elongato suberecto vaginis lanceolatis acuminatis brunneis tecto, vaginis superioribus pseudobulbum supremum æquantibus, pseudobulbis lineari-oblongis compressis lævibus monophyllis, folio sessili sex-pollicari lineari obtuso medio profunde canaliculato, pedunculo cum ovario 1–1½ pollicario suberecto, flores erecto sub 2-poll. latio, sepalis ovato-lanceolatis acutis aureo-marginatis intus rubro-purpureis, basin versus aureis, dorsali paullo latiore fornicato, lateralibus patenti-recurvis, petalis erectis sepalis concoloribus apicibus conniventibus, labello late oblongo apice rotundato puberulo aureo ultra medium sanguineo maculato, lobis lateralibus obsoletis, disco atro-purpureo fasciato callo tumido instructo, columna maculata, anthera conico-hemispherica papillosa, polliniis obovoideis cohærentibus, glandula transverse elongata arcuata.

M. Houtteana, *Reichb. f. in Hamb. Gartenz.* vol. xiv. (1858) p. 212. *Regel, Gartenfl.* vol. vii. (1858) p. 286.

M. Houtteana is very nearly allied to *M. tenuifolia*, Lindl. (Bot. Reg. t. 1986 (in note), and vol. xxv. t. 8) of Mexico, differing chiefly in the longer narrower pseudobulbs, and broader bright green leaves. The specimen figured was obtained from the Brussels Botanical Garden in 1891. It flowers annually in the cool Orchid House of the Royal Gardens, Kew, in April; the flower lasting for a month or more.

Descr.—*Rhizome* erect or ascending, stout; internodes an inch long or less, clothed with brown, lanceolate sheaths, the uppermost of which are as long as the young pseudobulbs, lower successively shorter. *Pseudobulbs* two to two and a half inches long, sessile, linear-oblong, compressed, smooth, pale green. *Leaf* solitary, sessile, six inches long by half to three-fourths of an inch broad, linear, obtuse, somewhat curved, dark green above, with a deep median channel, beneath paler and keeled. *Peduncle* with the ovary, one and a half to two inches long, up-curved, stout,

green, clothed at the base with acute brown sheaths. *Flower* nearly two inches broad across the lateral sepals, suberect. *Sepals* dirty yellow without, within of a rich red purple, with golden margins, the lateral ovate-lanceolate, spreading and recurved, and with a yellow area towards the base and lower margins streaked with red-brown; dorsal sepal oblong, acute, fornicate. *Petals* rather smaller than the sepals, coloured like the dorsal, oblong, acute, incurved, tips connivent. *Lip* rather shorter than the sepals, oblong, puberulous, tip rounded, side lobes none; disk with a low, broad, ill-defined, tumid callus, golden-yellow, with red-brown spots in the distal half, and purple streaks towards the base. *Column* yellow, spotted red-brown. *Anther* conico-hemispheric, papillose. *Pollinia* pyriform, coherent; gland bow-shaped.—*J. D. H.*

Fig. 1, Top of ovary, lip and column; 2, column; 3, anther; 4 and 5, pollinia:—*All enlarged.*

M S del. J.N. Fitch lith.

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Tab. 7534.

SYRINGA amurensis.

Native of North China and Japan.

Nat. Ord. Oleaceæ.—Tribe Syringeæ.

Genus Syringa, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 675.)

Syringa (Ligustrina) *amurensis*; arbuscula erecta, glaberrima, ramosa, foliosa, cortice rubro-brunneo, foliis breviter petiolatis late ovatis rotundatisve obtuse cuspidatis glaberrimis v. sparse pilosis, supra saturate viridibus lucidis, subtus pallidis, nervis utrinque ad 6–8 patentibus, paniculis magnis subpyramidatis, ramis patulis oppositis, floribus numerosissimis in capitula globosa terminalia dispositis breviter pedicellatis albo-stramineis, calyce campanulato glaberrimo margine breviter dentato, corollæ tubo brevissimo, lobis ovatis patentibus, filamentis exsertis, capsulis oblongis obtusis pustulatis, seminibus oblongo-lanceolatis ventre excavatis.

S. (Ligustrina) amurensis, *Rupr. in Bull. Phys.-Math. Acad. Sc. Petersb.* vol. xv. (1857) p. 371; *in Maxim. Prim. Fl. Amur.* pp. 193, 474. *Carr. in Rev. Hortic.* (1877) p. 453 (*non* 1861, p. 353). *Decne in Nouv. Arch. Mus. Paris, Ser.* 2, vol. ii. p. 43. *Sargent, Garden & Forest*, vol. i. (1888) p. 222.

S. japonica, *Dcne. l. c.* p. 44, t. 3. *Sargent in Gard. Chron.* (1886) vol. ii. p. 560, fig. 123; *Gard. & Forest. l. c.* & vol. ii. (1889) p. 291, figs. 114, 115.

S. ligustrina, *Hort. ex C. Koch Dendrol.* vol. ii. p. 272.

S. pekinensis, *Rupr. l. c. Decne l. c.* p. 431. *Sargent in Gard. & Forest. l. c.*

?S. rotundifolia, *Dcne. l. c.*

Ligustrina amurensis, *Rupr. Beitr. Pfl Russ. Reich.* vol. xi. p. 72; *Dec. Pl. Amur.* t. 9. *Maximov. Mel. Bot. Dec.* xix. p. 395, *cum var. manchurica, pekinensi & japonica.*

Syringa amurensis is a very remarkable plant, which no one seeing it in flower would suppose to be a Lilac, or anything but a Privet; whereas when in fruit it could not be taken for a Privet, or anything but a Lilac. This combination of the characters of Lilac and Privet induced its first describer, Dr. Ruprecht, to propose the sectional name for it of *Ligustrina*, which he subsequently raised to generic rank. It was introduced from Japan into America by Prof. Sargent, who sent plants to the Royal Gardens, Kew, from the Arnold Arboretum. His account of its introduction is as follows:—"In 1876, Mr. W. S. Clarke, President of the Agricultural College at Sapporo, in Japan,

sent me seeds of a tree identified with *Syringa japonica*, *Dcne*. The plants raised from these grew with great rapidity, attaining fifteen to sixteen feet in height in 1886, with a clear, straight stem, light red, thin, smooth bark, coriaceous leaves five to six inches long, and bearing in July immense compound panicles eighteen to twenty-four inches long by sixteen to eighteen inches broad, of small white flowers, almost destitute of smell. The tree continues long in bloom, and the leaves fall early, without changing colour. It promises to be one of the most magnificent of all the flowering trees that are hardy in this climate (Massachusets)." The only exception I have to make in this description is that in the Kew plant the flowers had a sweet heavy smell, like those of Privet.

The geographical range of *S. amurensis* is very wide, from Manchuria and North China to Corea and Japan, presenting slight varieties which have been formulated by Maximovicz, and which depend chiefly on the amount of or absence of the very sparse hairs on the under-surface and margins of the leaves; to which in the case of var. *pekinensis* may possibly be added a difference of habit, for of a specimen of that plant he says (writing in 1888) that it formed a slender, tree-like shrub, ten feet high, with long, flexuous, graceful branches. The Kew plant of this variety does not, however, conform to that character, but resembles a dwarf specimen of *S. amurensis*. Decaisne describes, as a fourth species of the section *Ligustrina*, *S. rotundifolia*, of Manchuria, a plant I have not seen, but which is most probably another variety of *S. amurensis*.

There are indigenous specimens of *S. amurensis* in the Kew Herbarium from the Amur River, collected by Maximovicz; from Peking, Bretschneider; top of Mt. Conolly, T. L. Bullock; and the Yalu River, Corea, H. E. M. James, Esq. In the Arboretum of the Royal Gardens, Kew, it forms a shrub flowering in June.

Descr.—A shrub or small tree, with red-brown bark, quite glabrous, or sparsely hairy on the back and margins of the leaves. *Leaves* three to six inches long, shortly petioled, broadly ovate, or almost orbicular, obtusely cuspidate, coriaceous, dark green and shining above, paler beneath; nerves six to eight pairs, divergent. *Panicles* attaining one to two feet in length, and sixteen to eighteen

inches in breadth, subpyramidal; branches spreading, and branchlets terminated by globose heads of very shortly pedicelled very pale cream-colrd. ebracteate flowers about one-third of an inch broad. *Calyx* campanulate, mouth shortly, obtusely, irregularly toothed. *Corolla-tube* very short; segments ovate-oblong, obtuse, spreading. *Filaments* about as long as the corolla-lobes. *Ovary* glabrous; style exserted; stigma 2-fid. *Capsule* an inch long, linear-oblong, obtuse; valves thin, brown, pustulate. *Seeds* lanceolate, obtuse at both ends, dorsally convex, ventrally excavate.—*J. D. H.*

Fig. 1, Fascicles of flowers; 2, anther; 3, ovary; *all enlarged*; 4, capsules, and 5, seeds (from Rupr. Dec. 1. c.) of *nat. size*.

M.S del. J.N. Fitch lith.

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Tab. 7535.

DIMORPHOTHECA Ecklonis.

Native of South Africa.

Nat. Ord. Compositæ.—Tribe Calendulaceæ.

Genus Dimorphotheca, *Vaill.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 453.)

Dimorphotheca *Ecklonis*; suffruticosa, erecta, robusta, ramosa, tenuiter scaberula v. glabrata, foliis obovato-oblongis oblanceolatis linearibusve integerrimis paucidentatis v. inferioribus basi sinuato-lobatis, apice rotundatis acutis v. mucronulatis, costa crassa, capitulo longe pedunculato solitario, involucri bracteis sub 2-seriatis lanceolatis acuminatis marginibus scariosis, fl. radii tubo brevi pubescente, ligula elongata alba dorso violaceo-striata, fl. disci azureis, corollæ lobis dorso sub apice incrassatis, acheniis radii oblongo-pyriformibus triquetris lateribus rugulosis dorso convexis.

D. Ecklonis, *DC. Prodr.* vol. vi. p. 71. *Harv. & Sond. Fl. Cap.* vol. iii. p. 419.

The plant here figured, after a careful examination by Mr. N. E. Brown, is referred by him, I think correctly, to the species above-named; though in the absence of fruit, which has not matured in this country, the absolute determination is not arrived at. De Candolle places it in the section *Osteospermopsis*, characterized by the sterile disk-flowers, the achenes of the ray-flowers being ovate-oblong, trigonous, smooth or subtubercled at the top. All the species of this section he regards as doubtful *Dimorphothecæ*, and perhaps more allied to *Osteospermum*.

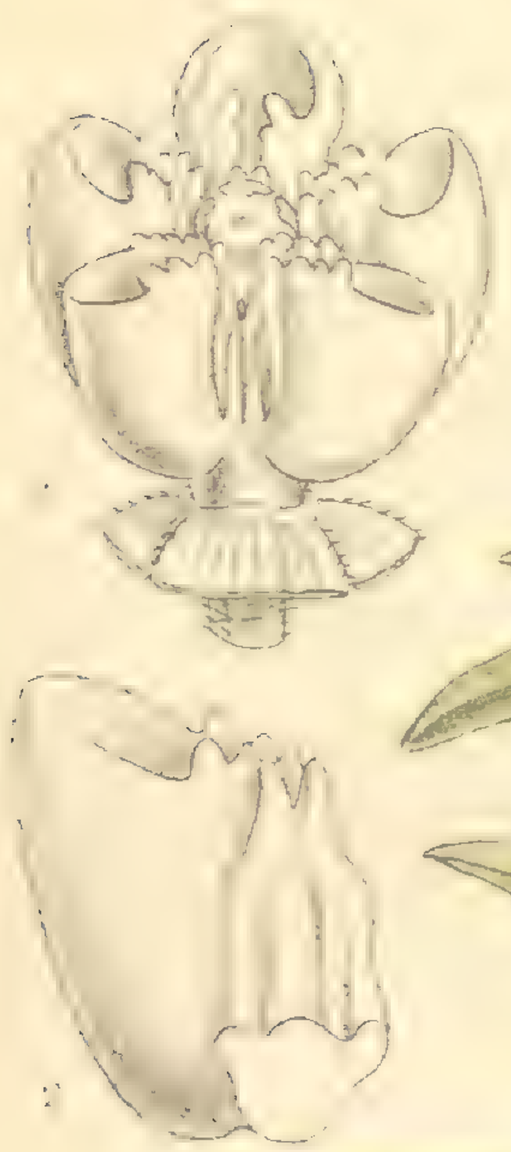
Six species of *Dimorphotheca* have been figured in the earlier volumes of this work, namely *D. aurantiaca*, DC. (*Calendula Tragus*, t. 408); *D. Tragus*, DC. (*C. Tragus*, t. 1981); *D. cuneata*, DC. (*Arctotis glutinosa*, Sims, t. 1343); *D. chrysanthemifolia*, DC. (*Calendula*, t. 2218); *D. graminifolia*, DC. (*nudicaulis*, DC. t. 5252); and *D. Barberiæ*, Harv. t. 5337. From all these *D. Ecklonis* differs in its shrubby stem and branches, in this respect coming nearest to *D. fruticosa*, DC., the stem of which is woody, but at the base only.

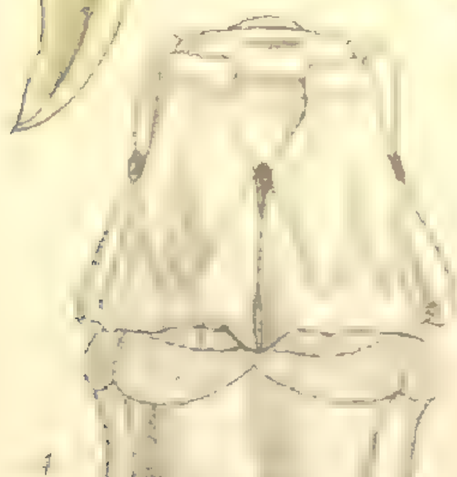
The only authentic specimen of *D. Ecklonis* in the Kew

Herbarium is a starved one, with very small leaves and flowers, from the channel of the Zwartkop River in Uitenhage. Ecklon's type of the species was from the Coega River, near Elandstroom. There are good specimens in the Herbarium, collected at Port Elizabeth by Mrs. Holland, with peduncles five to eight inches high. The specimen here figured was raised from Port Elizabeth seeds presented to the Royal Gardens, Kew, by Mr. William Armstong in 1895. It was grown as a summer bedding-out plant, attaining eighteen inches in height, and flowering in July.

Descr.—*Stem* branching, shrubby, with herbaceous, scaberulous, leafy branchlets, and terminal axillary peduncles. *Leaves* three to five inches long, oblanceolate, subsessile, acute obtuse or apiculate, sparingly serrate or toothed, nearly glabrous, pale green, midrib beneath very stout; nerves few, erecto-patent; uppermost leaves linear-oblong, obtuse, quite entire, lowermost sinuate-lobed. *Head* three inches in diameter. *Involucral bracts* half an inch long, appressed, lanceolate, acuminate, green. *Ray-florets* about sixteen, tube very short, hispid; limb one to one and a quarter inches long, oblanceolate, white above, violet-blue and striate beneath, with a broad white border; style very short. *Disk* small, florets azure; corolla-tube setulose; lobes very short, much thickened dorsally.—*J. D. H.*

Fig. 1, Base of corolla, immature achene and style of ray-flower; 2, disk-flower; 3, corolla-lobe of do.; 4, stamens; 5, style:—*All enlarged.*





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Tab. 7536.

GOMPHOCARPUS setosus.

Native of Southern Arabia.

Nat. Ord. Asclepiadeæ.—Tribe Cynancheæ.

Genus Gomphocarpus, *Br.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 753.)

Gomphocarpus *setosus*; suffruticosus, ramulis incano-tomentellis, foliis linearibus obtusis acutis apiculatisve glaberrimis in petiolum brevem angustatis, pedunculis 1-2-pollicaribus 6–8-floris pedicellisque subæquilongis pubescentibus, corollæ rotatæ segmentis elliptico-ovatis subacutis reflexis stramineis, coronæ squamis gynostegium æquantibus poculiformibus truncatis viridibus, oris angulis posticis paullo arrectis crenulatis, folliculis ovoideis rostratis setosis.

G. setosus, *Br. in Mem. Wern. Soc.* vol. i. (1809) p. 38; *Roem. & Sch. Syst.* vol. vi. p. 87; *Decne in Ann. Sc. Nat.* Ser. II. vol. ix. (1838) p. 324; *et in DC. Prodr.* vol. viii. p. 557. *Kew Bullet.* 1894, p. 335.

G. fruticosus, *Herb. Exsicc. Arab. Schweinf.* n. 810.

Asclepias setosa, *Forsk. Fl. Ægypt. Arab.* p. 51. *Vahl, Symb. Bot.* p. 23, t. viii.

The plant here figured is of more interest botanically than horticulturally. It belongs to a very large genus, containing upwards of sixty species, closely allied to *Asclepias*, differing from that genus only in the want of a ligulate process within each of the cup-shaped bodies that form a corona round the column of anthers. The majority of the species are natives of the hot, dry regions of Arabia, and of North and especially of South Africa, one extending to the Mediterranean region. The genus was supposed to be confined to those countries until Bentham, when re-organizing the Order *Asclepiadeæ* for the "Genera Plantarum," found that it was impossible to exclude from *Gomphocarpus* most of the species of the American genus *Acerates*, Ell., thus adding upwards of a dozen to the former.

G. setosus is most closely allied to *G. fruticosus*, Br. of the Eastern Mediterranean region, and North Africa, which has white corolla lobes with hairy margins, and two teeth on each side of the posterior margins of the coronal cups.

Seeds of *G. setosus* were collected on hills near Bir

Backban in the Hadramaut, by Mr. Lunt, one of the staff of the Royal Gardens, who, as botanical collector, accompanied Mr. Bent on his interesting excursion into that country in 1893. The plants raised flowered in a greenhouse in April, 1896.

Descr.—A small shrub; branches slender, branchlets, peduncles and petioles clothed with a hoary pubescence. *Leaves* two to three inches long, linear, obtuse acute or apiculate, quite glabrous, yellow-green above, paler beneath, base narrowed into a very short petiole. *Cymes* unbelliform, inserted between the petioles, six- to eight-flowered; peduncles and pedicels about one and a half inch long, slender, pubescent, pale red-brown; bracts minute. *Flowers* nearly an inch broad. *Sepals* small, lanceolate. *Petals* elliptic, subacute, glabrous, straw-colrd., reflexed. *Scales* cup-shaped, green, mouth truncate, margins behind on each side, produced a little upward, with three crenatures. *Fruit* an ovoid beaked follicle, three to four inches long, clothed with scattered, erect bristles.—*J. D. H.*

Fig. 1, Corona with the base of the corolla below it; 2, a cup-shaped scale of the corona; 3, the same, with one side removed; 4, staminal column with the coronal cups removed; 5, pollinia:—*All enlarged.*

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Tab. 7537.

RENANTHERA Storiei.

Native of the Philippine Islands.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Renanthera, *Lour.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 577.)

Renanthera *Storiei*; caule robusto elongato ascendente, foliis distichis oblongis lineari-oblongisve carnosis carinatis apice 2-lobis, pedunculo pedali folio opposito valido, panicula pendula ampla pedali ramis patulis multifloris, bracteis parvis triangularibus viridibus, pedicellis cum ovariis 1–1½-pollicaribus roseis, floribus 2½–3 poll. longis, sepalo dorsali erecto lineari subspathulato obtuso rubro-aurantiaco sanguineo irrorato, lateralibus pendulis basi subconnatis rhombeo-v. spathulato-obovatis obtusis undulatis pallide coccineis plagis sanguineis ornatis, petalis sepalo dorsali æquilongis concoloribusque erecto-patentibus oblanceolatis falcatis, labello parvo sessili, lobis lateralibus erectis quadrato-oblongis sanguineis basi extus aureis intus aureo striatis, intermedio duplo minore ovato obtuso sanguineo basin versus 2-calloso, calcare conico apice rotundato aureo.

R. Storiei, *Reichb. f. in Gard. Chron.* 1880, vol. ii. p. 296. *Warner & Williams, Orchid. Album*, t. 513. *Williams, Orchid Growers' Man.* Ed. 7, p. 694.

Vanda Storiei, *Storie ex Reichb. f. l. c.*

This magnificent plant, though in every respect so much a finer species, differs less botanically from the well-known *R. coccinea*, Lour. (Tab. 2997, 2998), than would at first sight be supposed. The flowers are much larger, of far more vivid colouring, the dorsal sepals and petals broader, and the lateral sepals more undulate, with bright, velvety blood-red blotches, the side-lobes of the lip are larger, and the midlobe obtuse. The column and the pollinia with their gland and stipes are the same in both species.

Renanthera Storiei is a native of the Philippine Islands, and was first described in 1880 by Reichenbach. The plate here given is from a magnificent plant which flowered at Burford Lodge, by Sir Trevor Lawrence, in June of last year, and which was kindly lent for the purpose of being figured, together with a sketch of the whole plant. There is a good specimen of it in the Royal Gardens, Kew, which has not flowered as yet.

June 1st, 1897.

Descr.—*Stem* ten to twelve feet high, as thick as a swan's quill. *Leaves* eight to ten inches long, from oblong to linear-oblong, alternate, distichous, fleshy, keeled, bright green, tip two-lobed. *Peduncle* a foot long, leaf-opposed, pale reddish brown. *Panicle* a foot long, and nearly as broad, pendulous; branches spreading, the lower many-fld.; bracts small, triangular, green; pedicels with the ovary rose-colrd., one and a half inches long. *Flowers* two and a half to three inches long from the tips of the dorsal to those of the lateral sepals. *Dorsal sepal* erect, linear, widened towards the obtuse tip, orange-red, mottled with crimson; lateral sepals pendulous, sub-rhomboidly or spathulately obovate, undulate, crimson with large blood-red blotches. *Petals* erecto-patent, sub-spathulately linear, obtuse, falcate, coloured like the dorsal sepal. *Lip* very small; side-lobes quadrately oblong, erect, blood-red, bases externally golden-yellow, internally streaked yellow and red; midlobe rather shorter than the side-lobes, ovate, obtuse, blood-red, with two oblong calli at the base; spur broadly conical, tip rounded.—*J. D. H.*

Fig. 1, Lip and column; 2, side view of do.; 3, top of column; 4 and 5, pollinia with strap and gland:—*All enlarged*; 6, reduced view of top of stem and leaves.

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Tab. 7538.

STROBILANTHES CALLOSUS.

Native of the East Indies.

Nat. Ord. Acanthaceæ.—Tribe Ruellieæ.

Genus Strobilanthes, *Bl.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 1086.)

Strobilanthes (Bracteatæ) *callosus*; frutex erectus, caule robusto subpolygono tuberculis seriatis parvis instructo, foliis 6–9-pollicaribus elliptico-lanceolatis caudato-acuminatis subserrulatis ciliolatis in petiolum elongatum ad medium alatum angustatis, nervis utrinque costæ 8–16, supra lineolatis et sparse pilosis, subtus glabratis, floribus amplis in spicas strobiliformes dispositis, bracteis late scaphæformibus obtusis herbaceis, bracteolis 0, sepalis linearibus obtusis, corollæ subsymmetricæ tubo brevi, fauce inflato calyce duplo longiore intus piloso, limbo fere 2-poll. lato lobis subæqualibus patentibus orbicularibus undulatis violaceis, ore pallido, filamentis pilosis, antheris oblongis, ovario glabro, stylo piloso, capsula $\frac{3}{4}$ poll. longa 2-sperma, seminibus obovatis acutis appresse villosis.

S. callosus, *Nees in Wall. Pl. As. Rar.* vol. iii. p. 85; *et in DC. Prodr.* vol. x. p. 185 (*pro max. part.*). *T. Anders. in Journ Linn. Soc.* vol. ix. (1867) p. 469. *Clarke in Fl. Brit. Ind.* vol. iv. p. 451. *Kirtikar in Journ. Bomb. Nat. Hist. Soc.* vol. vii. (1892) p. 64, t. A. *Dalz. & Gibs. Bomb. Fl.* 188 (*excl. descr. semin.*). *Constable in Kew Bullet.* 1896, p. 98.

S. Grahamianus, *Wight. Ic.* t. 1520. *Dalz. & Gibs. l. c.* 188. *T. Anders. l. c.*

Ruellia callosa, *Wall. Cat.* n. 2359.

A native of Western India, abundant below the Ghats in Concan, Canara, and in the Central Provinces; also extending northward to Mt. Abu in Rajputana, there forming a shrub six to eight feet high, said to flower in its third year of growth, from June to September. When fully grown the stems are cut to the ground, and used with mud in making the walls of cottages, &c., new stems coming up from the stools. The leaves are used in native practice as a tonic, febrifuge, antispasmodic, stimulant and purgative, but according to Surgeon-Major Kirtikar, when used fresh, the hairs have an irritating action on the stomach. Recently dried flower-buds have been sent to the Director of Kew by Mr. F. C. Constable, with the following information: "I was walking on a steep mountain side (in

Khandalla) through half a mile or more of these trees, close together, simply laden with buds. There was in the air a sweet resinous, pleasant odour from the buds. My hands were covered with what they exuded, and—this is the point—though I washed my hands three times, the pleasant scent remained." Th buds sent by Dr. Kirkitar were transmitted to Messrs. Piesse & Lubin, who reported that "the odour somewhat resembles Patchouli, but is not so good, and would be likely to be used in the soap-trade." *Kew Bulletin l. c.*

Seeds of *S. callosus* were received at the Royal Gardens, Kew, in 1888, from the Botanical Gardens of Saharanpur. They were collected on Mt. Abu, where Mr. Duthie informs me the shrub is supposed to flower about every ninth year. The plants raised at Kew flowered in a warm greenhouse in August, 1896, that is in the eighth year after the seeds were sown.

Descr.—An erect shrub. *Stems* erect, strict, simple or branching, six to eight feet high, as thick as the thumb, obscurely polygonal, with small tubercles on the angles. *Leaves* six to nine inches long, elliptic-lanceolate, acuminate, subserrulate, base narrowed into a long, slender petiole, which is winged down to the middle, bright green and lineolate above, margins ciliolate, pale beneath; nerves many, puberulous. *Flowers* sessile, large, pale violet-blue, in short globose or oblong, catkin-like spikes, one to two inches long, with broadly boat-shaped or hemispheric green imbricating bracts. *Sepals* linear, obtuse. *Corolla-tube* very short, dilated into a subcampanulate throat twice as long as the calyx, and hairy within; limb nearly two inches in diameter; lobes orbicular, undulate. *Filaments* with spreading hairs; anthers short. *Ovary* glabrous; style filiform, glandular-hairy. *Capsule* oblong, 2-seeded. *Seeds* obovate, appressedly villous.—*J. D. H.*

Fig. 1, Portion of stem of *nat. size*; 2, calyx; 3, base of corolla laid open with stamen; 4 and 5, stamens; 6, ovary and disk:—*All enlarged.*

M.S.del. J.N.Fitch lith.

L. Reeve & Cº London.

Tab. 7539.

VERONICA DIOSMÆFOLIA, *var.* TRISEPALA.

Native of New Zealand.

Nat. Ord. Scrophularineæ.—Tribe Digitaleæ.

Genus Veronica, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 964.)

Veronica (Hebe) *diosmæfolia*; fruticulus erectus subcorymbosim ramosus glaberrimus, ramulis et inflorescentia puberulis, ramis gracilibus cicatricatis, cortice fusco-brunneo, foliis subconfertim decussatis patulis coriaceis ½–1 poll. longis lineari-oblongis acutis integerrimis subcarinatis, racemis brevibus apices versus ramulorum corymbosis breviter pedunculatis, floribus pedicellatis ad ⅓-poll. latis pallide lilacinis, bracteis parvis pedicellis multo brevioribus, calycis parvi corollæ tubo brevioris lobis brevibus latis ovato-oblongis obtusis, corollæ tubo brevi infundibulari, lobis obtusis postico majore late ovato, antico lineari-oblongo, filamentis elongatis, antheris apiculatis, stylo gracili deflexo, capsulis ⅛ poll. longis ovoideis calyce multo longioribus glaberrimis.

V. diosmæfolia, *R. Cunn. in Bot. Mag. sub* t. 3461 (1836) diosmifolia) *Benth. in DC. Prodr.* vol. x. p. 460. *A. Cunn. in Ann. Nat. Hist.* vol. i. (1838) p. 459; *Hook. f. Fl. Nov. Zel.* vol. i. p. 193; *Handb. N. Zeal. Fl.* p. 209. *Kirk in Trans. N. Zeal. Instit.* vol. iii. (1870) p. 168; *et* vol. xxviii. (1895) p. 525. *Armstrong l. c.* vol. xxii. (1881) p. 351.

Var. trisepala; gracilior, foliis ecarinatis, calycis lobis 3 supremo emarginato. V. trisepala, *Colenso in Trans. N. Zeald. Instit.* vol. xv. (1882) p. 326. *V. diosmæfolia*, var. trisepala, *Kirk l. c.* vol. xxviii. p. 525.

Veronica is now known to be the largest genus by far of New Zealand flowering plants. Banks and Solander in 1769 procured 3 species. Allan Cunningham in 1838 published 10; the additions being due to the indefatigable labours of himself and brother Richard, during their visit to the Bay of Islands, Allan in 1826, and again in 1838, and Richard in 1834, collecting in both cases for the Sydney Botanical Gardens. My "Flora Novæ Zelandiæ" (1853) contains 24, the principal additions being from the mountainous interior of the Northern Island, and the previously unexplored Middle Island. In my "Handbook of the New Zealand Flora" (1867) there are 40. Mr.

Armstrong's enumeration (in the "Transactions of the New Zealand Institute," l. c. 1881) gives 60. And this by no means exhausts the list of species known to exist in the islands, for several have been discovered since the last date, and I have drawings of others (species or varieties) that have flowered in the Royal Botanical Gardens of Edinburgh, from seeds of indigenous plants, which I am unable to identify with any described ones.

Veronica diosmæfolia was discovered at the Bay of Islands by Richard Cunningham in 1834, where it occurs as far south as Tekawaki, and it has since been found at Nelson by Bidwell, and at Canterbury by Sinclair and Haast. It was described by its discoverer as having white flowers, whereas those of the specimen here figured are pale lilac. Mr. Kirk, F.L.S. (of Wellington, N.Z., now happily engaged on a Flora of New Zealand), to whom I submitted the drawing, informs me that he regards it as "a variety of *diosmæfolia* with the inflorescence mostly reduced to short, simple racemes which are further removed from the apex of the branches than usual; with calyx-segments rather broad, and leaves less acute than in the type." It is identical with specimens of *V. trisepala*, Colenso, which Mr. Kirk has referred to *V. diosmæfolia* as var. *trisepala*.

The specimen here figured is from the Royal Botanical Gardens of Edinburgh, where it flowered in June, 1893.

Descr.—A dwarf, erect, much corymbosely branched evergreen bush; branches covered with very dark brown bark. *Leaves* one half to one inch long, in rather crowded pairs, linear-oblong, acute, quite entire, nerveless, bright green above, pale and keeled by the midrib beneath; petiole very short. *Flowers* towards the end of the branches, in short subcorymbosely disposed minutely puberulous peduncled racemes an inch long; bracts minute, much shorter than the pedicels. *Calyx* minutely puberulous, rather shorter than the corolla-tube, deeply 4-lobed; lobes oblong, obtuse, two sometimes connate (var. *trisepala*). *Corolla* white or pale lavender blue; tube shortly funnel-shaped; limb one-fourth to one-third inch across; lobes unequal, obtuse, posticous largest broadly ovate, lateral ovate, anticous much smaller, oblong, or linear-oblong. *Filaments* as long as the corolla-lobes; anthers pale,

apiculate. *Ovary* glabrous; style slender, deflexed. *Capsule* about one-sixth of an inch long, ovoid, obtuse, turgid, much longer than the calyx-lobes.—*J. D. H.*

Fig. 1, Portion of raceme; 2, pedicel, bract and calyx; 3 and 4, anthers; 5, ovary and disk; 6, portion of fruiting raceme:—*All enlarged*; 7 and 8, portion of branchlets and leaves, of *nat. size.*

M.S. del. J.N. Fitch lith.

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Tab. 7540.

BEGONIA Baumanni.

Native of Bolivia.

Nat. Ord. Begoniaceæ.

Genus Begonia, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 841.)

Begonia (Lemoineæ) *Baumanni*; rhizomate magno globoso, caule robusto folioso sparse piloso roseo, foliis crasse petiolatis carnosis reniformibus duplicato crenatis palmatim nervosis utrinque marginibusque sparse setosis, supra saturate viridibus subtus pallidis roseo-suffusis nervis validis hispidulis, floribus maximis roseis suaveolentibus in racemum terminalem nutantem pauciflorem dispositis longe pedicellatis, bracteis brevissimis incisis, rachi pedicellisque roseis sparse pilosis, *fl. masc.*: petalis 4 subcuneatim rotundatis, staminibus in globum compactis, filamentis liberis, antheris pyriformibus; *fl. fem.*: petalis 5 inæqualibus cuneato-rotundatis, ovario carnoso triptero sparse piloso viride, alis crassis unica cuneiforme, capsula 3 loculari, placentis 2-partitis, segmentis utrinque ovuliferis, stigmatibus latis undulatis et convolutis secus marginem truncatam stigmatosis.

B. Baumanni, *Lemoine ex Wittm. in Gartenfl.* vol. xl. (1891) p. 47; et 281, t. 1348, *xylog.* fig. 62. *Neubert in Gart. Mag.* (1894) p. 775.

Begonia de Cochabamba, *Sacc. in Rev. Hortic.* vol. lviii. (1886) p. 347.

Begonia Baumanni belongs to the tuberous-rhizomed group of the genus, which includes *B. Veitchii*, Hk. f. (Tab. 5663), *B. Clarkei*, Hk. f. (Tab. 5675) and *B. rosæflora*, Hk. f. (Tab. 5680), and some of which have proved to be, as I ventured to predict in publishing *B. Veitchii* in 1867, amongst the most ornamental of border plants. They have been referred by myself and others to the section *Huszia*, A.DC., which contains species with different types of stigmas; those of *B. Veitchii*, for instance, having the arms elongate, with a spiral line of stigmatic papillæ, whilst those of *B. rosæflora* and *Baumanni* have short, broadly truncate stigmas, cleft on the ventral side, but not 2-lobed, with undulate convolute margins, and the papillæ are confined to the truncate upper margins. Recently M. Fourier has proposed ("Bull. Soc. Centr. d'Hortic. de France," Ser. 3) (1879) a new grouping of the tuberous Begonias, according to which *B. Baumanni* is placed in section *Lemoineæ*, characterized by

the monœcious flowers, males with 4–8 petals, fem. with 5, stigmas persistent, with horse-shoe shaped arms (hardly the case in *B. Baumanni*) and 2-fid placentas. It includes the sections *Huszia*, *Eupetalum*, and *Barya* of A. de Candolle.

B. Baumanni is a native of Cochibamba in the Eastern Andes of Central Bolivia, the capital of which (of the same name) is 8396 ft. above the sea. From thence seeds were sent to Herrn E. N. Baumann of Bolivia, in honour of whom the plant is named. The drawing here given was made from a plant which flowered in a cool greenhouse of the Royal Gardens in September, 1896. It succeeds also in summer in the open air.

Descr.—*Rootstock* globose, attaining the dimensions of a middle-sized melon; stem petiole and branches of inflorescence and pedicels bright rose-red, sparsely hairy. *Stem* one to one and a half feet high, stout, leafy. *Leaves* stoutly petioled, three to five inches broad, fleshy, reniform, doubly crenate, palmately nerved, sparsely hispidulous on both surfaces, and on the margins, and on the stout flabellate nerves beneath, bright green above, paler beneath, and often suffused with red; petiole four to six inches long. *Flowers* monœcious, very large, rose-red, in a lax terminal nodding few-fld. raceme, very sweet-scented; bracts lacerate; pedicels one to three inches long, stout. *Male flowers* upward of three inches in diameter. *Petals* four, subcuneately orbicular. *Stamens* crowded in a globose mass; filaments short, free; anthers obovoid. *Fem. flowers* about two and a half inches in diameter. *Petals* 5, unequal, cuneately-obovate or -orbicular. *Styles* 3, short, broadly cuneate, truncate, convolute, and undulate, stigmatose along the upper margins only. *Ovary* fleshy, green, hairy, with three thick wings, two of them rounded, the other cuneiform, three-celled; placentas bipartite, segments ovuliferous on both faces.—*J. D. H.*

Fig. 1 and 2, stamens; 3, ovary and styles; 4, transverse section of ovary: —*All enlarged.*

M.S. del. J.N. Fitch lith

Vincent Brooks

Tab. 7541.

Lælia longipes.

Native of Brazil.

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Lælia, *Lindl.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 533.)

Lælia *longipes*; pseudobulbis $2\frac{1}{2}$–3-pollicaribus lineari-oblongis unifoliatis, vaginis albis scariosis lineatis imbricatis pseudobulbo arcte appressis, folio 3–6-pollicari sessili erecto elliptico-oblongo obtuso carnoso supra concavo læte viridi subtus pallidiore obtuse carinato, pedunculo erecto flexuoso paucifloro folio breviore, bracteis minutis triangularibus, pedicello cum ovario 2–3-pollicari arcuato v. flexuoso, floribus ad 2 poll. diam. roseis labello aureo, sepalis (lateralibus paullo latioribus) petalisque consimilibus patentibus lineari-oblongis obtusis, labelli parvi lobis margine crispatis, lobis lateralibus subrotundatis marginibus recurvis, intermedio subquadrato, columna breviuscula, anthera fere globosa.

L. longipes, *Reichb. f. mss. in Herb. Mus. Reg. Berol. ex Xen. Orchid.* vol. ii. p. 29. *Cogniaux & Gross. Dict. Icon. Orchid.* Lælia, t. II. *Gard. Chron.* 1897, vol. i. p. 110.

L. Lucasiana, *Rolfe in Orchid. Review*, vol. i. (1893) p. 265.

Bletia longipes, *Reichb. f. Xen. Orchid.*

One of the smallest species of the beautiful genus *Lælia*, and not remarkable for any redeeming character that would recommend it to the horticulturist. It is a native of Brazil, where it was discovered by the traveller Sellow; and was first described from his dried specimens by Reichenbach.

The sepals and petals are represented as nearly white by Cogniaux and Grossens in their "Dictionnaire Iconographique des Orchidées," the pseudobulb short, and the leaves of a very dark colour. Its nearest ally is *L. crispilabia*, A. Rich., from which it is distinguished by its yellow lip. Though not common in cultivation, it flowered in Sir Trevor Lawrence's collection in 1892, and in that of C. J. Lucas, Esq., of Warnham Court, Horsham. The specimen here figured was received at Kew from Messrs. Sander & Co. in 1893, and flowered for the first time in July, 1896.

Descr.—*Pseudobulbs* two and a half to three inches long, linear-oblong, as thick as the little finger, smooth, green, clothed with appressed white or pink membranous striated

sheaths. *Leaf* solitary, sessile, three to six inches long, by three-quarters to one and a quarter inches broad, narrowly elliptic-oblong, obtuse, thickly fleshy, concave above, obtusely keeled beneath, pale green on both surfaces. *Peduncle* shorter than the leaves, erect, flexuous, naked, two- to three-flowered, green; bracts minute, triangular; pedicels with the ovary two to three inches long. *Flowers* two inches broad across the petals, sepals and petals spreading, pale, mauve-purple, lip golden-yellow. *Sepals* linear-oblong, obtuse. *Petals* as long, but rather narrower. *Lip* rather shorter than the sepals, 3-lobed; side-lobes broadly oblong, erect, margins recurved crenate and undulate; midlobe ovate, obtuse, sides involute crisped and waved, disk sometimes stained with brown towards the base. *Column* short, streaked with purple. *Anther* hemispheric—*J. D. H.*

Fig. 1, Lip: 2, side, and 3, front view of column; 4, anther; 5, pollinia: —*All enlarged.*

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Tab. 7542.

ZAMIA obliqua.

Native of New Grenada.

Nat. Ord. Cycadeæ.—Tribe Eucephalarteæ.

Genus Zamia, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 447.)

Zamia (Euzamia) *obliqua*; trunco gracili lævi, prophyllis triangularibus longe acuminatis fuscis infra comam imbricatis, foliis longe petiolatis, petiolo gracili lana fusca detergibili primum operto, rachi nudo v. rarissime hic illic aculeolato, foliolis sub 6-jugis 4–6-pollicaribus ovatis ovato-oblongis lanceolatisve acuminatis caudiculatisve basi in petiolulum crassum angustatis crasse chartaceis ultra medium spinuloso-serrulatis, nervis gracillimis creberrime lineolatis, strobilo fœmineo 6-poll. longo $2\frac{1}{2}$ poll. diam. breviter crasse pedunculato, pedunculo prophyllis lineari-lanceolatis fuscis dense vaginato cylindraceo vertice conico apice pungente, peltis 6-seriatis transverse hexagonis fusco-tomentosis vertice planis v. leviter depressis.

Z. obliqua, *A. Braun in Monatsb. Akad. Berlin*, 1875, p. 376. *Regel, Cycad. Revis.* 1875, p. 42; *in Illustr. Hortic.* vol. xxiv. (1877) p. 140, t. 289. *Dyer in Gard. Chron.* 1882, vol. i. p. 461, fig. 72.

Z. obliqua is a very distinct species of a genus, which, when founded by Linnæus, in 1763, contained but one representative (*Z. pumila*, of the West Indies), but of which nearly forty are now enumerated; though of these probably only thirty or so are really well characterized. All are tropical or subtropical American. Seven are now figured in this magazine, of which two are nearly related to *Z. obliqua*, namely, *Z. furfuracea*, Ait. (t. 1969) of Mexico, and *Z. Skinneri*, Warz. of the Isthmus of Panama (t. 5242). *Z. obliqua* was discovered by Dr. Seemann, in 1847, when he was botanist to H.M.S. *Herald*, a ship commissioned by the Admiralty under Captain Kellett, R.N., to search for Sir John Franklin's Expedition along the Western polar shores of the American continent. On their way North in the Pacific Ocean, Dr. Seemann had an opportunity of collecting in New Grenada, where he found *Z. obliqua* on Cape Corrientes. Unfortunately he did not distinguish it from *Z. Skinneri*, and in the Botany of the *Herald's* Voyage, p. 202, amongst the habitats given for the latter plant is Cape Corrientes;

a blunder consequently perpetuated under the description of *Z. Skinneri* in this magazine (Tab. 5242). *Z. obliqua* was subsequently (in 1875) collected in the same locality by Gustav Wallis, by whom living specimens were sent to Messrs. Veitch. It was first described by Prof. A. Braun, from flowerless specimens cultivated in the Berlin Botanical Gardens. The fine plant here figured was procured by the Royal Gardens, Kew, from Mr. Bull in 1880. It flowered for the first time in 1896.

Descr.—*Trunk* slender, attaining eight feet in height, crowned beneath and amongst the leaves with imbricating subulate-lanceolate tomentose entire prophylla an inch to an inch and a half long. *Leaves* two to three feet long; rachis and petiole unarmed, or with very few scattered spinules, when quite young clothed with a light brown wool. *Leaflets* about six pairs, four to six inches long, petiolulate, ovate, ovate-oblong, or -lanceolate, usually caudate-acuminate, sharply subspinulosely toothed from the middle to the tip, thickly chartaceous, bright green on both surfaces, striate with close-set nerves; petiolule half an inch long or less, base swollen. *Female cone* shortly peduncled, about six inches long, by two and a half in diameter, cylindric, terminated by a broad conical crown with a small apical mucro, clothed all over with a thin pale brown tomentum. *Scales* in six series of about ten each, transversely oblong, about an inch in transverse breadth, and one-third of an inch in thickness, hexagonal, with a truncate flat or slightly concave top; peduncle stout, an inch long, clothed with prophylla like those on the trunk, longer than itself.—*J. D. H.*

Fig. 1, Scale; 2, ovule; both *enlarged*.

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Tab. 7543.

CATTLEYA elongata.

Native of Brazil.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Cattleya, *Lindl.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 531)

Cattleya *elongata*; caulibus 1–2-pedalibus e basi decumbente ascendentibus strictisve simplicibus cylindraceis sulcatis, internodiis 1–2-pollicaribus non incrassatis, foliis apices versus caulorum paucis oblongis obtusis crasse coriaceis rigidis dorso carinatis saturate viridibus, racemo longe pedunculato erecto 6–10-flore, rachi valida viridi, vagina ad basin pedunculi lineari-oblonga carinata, bracteis parvis, pedicellis cum ovario 3-pollicaribus viridibus, floribus erectis 4-poll. expans., sepalis petalisque obtusis undulatis rufo-aurantiacis, sepalo dorsali lineari, lateralibus lineari-oblongis, petalis sepalo dorsali consimilibus sed crispato-undulatis, labelli rosei lobis lateralibus dimidiato-ovatis, intermedio flabelliforme 2-lobo, columna clavata.

C. elongata, *Rodrig. Gen. & Sp. Orchid. Nov.* vol. i. (1877) p. 72. *Rolfe in Orchid. Rev.* vol. vii. p. 206.

C. Alexandræ, *L. Linden & Rolfe in Gard. Chron.* 1892, vol. i. p. 522; in *Lindenia*, vol. viii. t. 357, 358.

A remarkable and very beautiful species, distinguished for its very long peduncle, and the peculiar colour of the sepals and petals. Its nearest ally, as pointed out by Mr. Rolfe, is with *C. Leopoldi*. In the specimen described in the *Gardener's Chronicle*, there were ten racemes, with peduncles fifteen to eighteen inches long, each bearing six to ten flowers. It was flowered by Messrs. Linden & Co., of Brussels, in 1892. The specimen here figured was purchased for the Royal Gardens, Kew, at an auction sale in 1893. It flowered in the Orchid House in October, 1893, and proves to be a finer variety than has hitherto been known.

Descr.—*Stems* erect, or ascending from a decumbent rooting base, one to two feet high, as thick as the little finger, terete, sulcate, pale; internodes one to two inches long, naked, not swollen; nodes marked by a transverse brown line. *Leaves* few at the top of the stem, sessile, about six inches long by one and a half broad, oblong, obtuse, thickly and rigidly coriaceous, dorsally keeled, dark green above. *Peduncles* many, up to eighteen inches

long, stout, erect, green; basal sheath three inches long, linear-oblong, keeled. *Raceme* rather short, six- to ten-fld., erect; bracts small, triangular; pedicel with ovary about three inches long, strict, erect, green. *Flowers* about four inches in diameter; sepals and petals undulate, obtuse, ochraceous- or rufous-orange. *Dorsal sepal* two and a half inches long, linear, lateral linear-oblong. *Petals* like the dorsal sepal, but sides more crispedly waved. *Lip* rose-colrd.; side lobes dimidiate-ovate, projecting forward, tips obtuse; midlobe much larger, flabelliform, 2-lobed or very broadly deeply obcordate, lobes rounded. *Column* clavate. *Pollinia* 4, cohering in pairs by their straps, and the straps cohering at the base by a lobulate viscus—*J. D. H.*

Fig. 1, Column; 2, anther-cap; 3, pollinia; 4, one pair of pollinia:—*All enlarged.*

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Tab. 7544.

POLYGONUM BALDSCHUANICUM.

Native of Bokhara.

Nat. Ord. Polygonaceæ.—Tribe Eupolygoneæ.

Genus Polygonum, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 97.)

Polygonum (Tiniaria) *baldschuanicum*; frutex volubilis, foliis inferioribus oppositis longe petiolatis ovato-hastatis cordatisve acutis obtusis acuminatisve obsolete crenulatis marginibus scaberulis, ochreis brevissimis cito evanidis, foliis supremis minoribus angustioribus, paniculis axillaribus et terminalibus folia superantibus laxe ramosis, rachi angulata, bracteis minutis, floribus roseis subsolitariis fasciculatisve, pedicellis gracilibus supra basin articulatis, sepalis hyalinis 3 exterioribus ovatis, petalis dorso alatis, alis in pedicellum apicem versus trialatum decurrentibus, 2 interioribus subobovatis suberectis exalatis, staminibus 8, filamentis liberis basi pilosis, glandulis perigynis 0, stigmate sessile magno capitato 3-lobo, calyce fructifero paullo aucto late 3-alato, alis subundulatis, achænio triquetro nigro nitido, cotyledonibus accumbentibus.

P. baldschuanicum, *Regel in Act. Hort. Petrop.* vol. viii. (1884) p. 684, t. 10, *et Descr. Plant. Nov. Reg. Turkest. fasc.* ix. p. 44, t. 10. H. Zabel *in Garten-flora*, vol. xxxvi. (1888) p. 409, t. 1278. *L. Henry in Le Jardin*, vol. ix. (1895) p. 231, *cum ic.*

A very beautiful hardy climber, belonging to the same section of *Polygonum* as the notorious pest of cultivated grounds, *P. Convolvulus*, L., but differing from it in the perennial stem, colour of the flowers, and broadly winged fruiting perianth. It is much more nearly allied to the Chinese and Japanese *P. multiflorum*, Thunb., which is chiefly distinguished by its tuberous rootstock, armed stems, and much smaller flowers. *P. baldschuanicum* is one of the many discoveries of Albert Regel, who found it in 1883 on the banks of the River Wachsch, at the Eastern foot of Mt. Sevistan in Bokhara at an elevation of 1200–1700 ft. The specimen figured is from a plant six feet high, raised in the Royal Gardens, Kew, from seeds sent from the Imperial Botanical Garden of St. Petersburgh, which flowered in September, 1896.

Descr.—*Stem* very slender, woody, branched, scandent, up to twenty feet high, half an inch in diameter at the base; bark pale, lenticellate. *Leaves* long-petioled, ovate-

or hastate-cordate, acute obtuse or acuminate, pale green, margins scaberulous. *Panicles* axillary and terminal, effuse, branches slender, angular; flowers in small fascicles, rose-colrd., nearly half an inch broad; bracts minute; pedicels slender, one-eighth to one-fourth of an inch long, trigonous above, jointed above the base. *Sepals* hyaline; three outer ovate, spreading, dorsally winged, wing decurrent on the angles of the pedicel; three inner more obovate, suberect, not winged. *Stamens* 8; filaments about as long as the sepals, hairy towards the base. *Ovary* small, triquetrous; style 0; stigma large, capitate, 3-lobed. *Fruiting* calyx broadly 3-winged, wings rather waved. *Achene* triquetrous, black, shining.—*J. D. H.*

Fig. 1, Portion of panicle with bracts and flowers; 2, stamens; 3, ovary:—*All enlarged.*

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Tab. 7545.

HELIANTHUS tuberosus.

Native of North America.

Nat. Ord. Compositæ.—Tribe Helianthoideæ.

Genus Helianthus, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 376.)

Helianthus *tuberosus*; radicibus tuberiferis, caule elato superne ramoso pubescente v. hirsuto, foliis inferioribus oppositis ovato-cordatis v. lanceolatis attenuato-acuminatis grosse v. minute dentatis in petiolum elongatum alatum angustatis supra scaberulis subtus puberulis, superioribus alternis oblongis sessilibus, involucri bracteis laxe imbricatis lanceolatis attenuato-acuminatis glabris hirsutulis v. pubescentibus, receptaculi convexi squamis dorso hirsutis, radii ligulis 12–20 elongatis, disci corollis **flavis, acheniis apice marginibusque puberulis.**

H. tuberosus; *Linn. Sp. Pl. Ed.* i. p. 905 (*excl habitat.*) *Ait. Hort. Kew. Ed.* 2, vol. v. p. 127; *DC. Prodr.* vol. v. p. 590. *Jacq. Hort. Vindob.* vol. ii. p. 75, t. 161. *Schkuhr Handb.* vol. iii. p. 250, t. 258. *A. Gray Synopt. Fl. N. Am. Gamopet.* p 280. *Trumbull & Gray in Am. Journ. Sc. Ser.* 3, vol. xiii. (1877) p. 374. *Deene in Fl. des Serres*, vol. xxiii. (1881) p. 112. *Turpin in Mem. Mus. Paris*, vol. xix. (1830) p 12, t. 41. *G. Meyer, in Bericht. Deutsch. Bot. Geselsch.* vol. xiv. (1882) p. 347.

H. doronicoides; *Torr. & Gr. Fl. N. Am.* vol. ii. p. 327 (*in part*). *A. Gray, Man. Bot. N. Un. St.* p. 257 (*non Lamck.*).

Flos Solis Farnesianus; *Colonna, Ecphrasis*, vol. ii. p. 33, t. 13 (1616).

Chrysanthemum latifolium Brasil; *Bauh. Prodr.* p. 70 (1620).

Flos tuberosus Solis seu Flos Farnes. Fab. Column; *Aldinus, Cesenat. Descr. Rar. Pl.* p. 91 (1625).

Battatas de Canada, or Artichoke of Jerusalem; *Parkins. Parad.* p. 517, fig. 4, 518 (1629); *Theatr. Bot.* p. 1383 (1640).

Adenes Canadenses; *P. Laurent. Apparat. Plantar.* (1632).

Flos Solis pyramidalis; *Johnson in Gerard Herball*, p. 763 (1633).

Pernanus Solis Flos ex Indiis tuberosus, *Hernand. Pl. Mex. Hist.* (*Recchi*) p. 878, 881 (1651).

Canada, Artischoki sub terra; *Vallot, Hort. Reg. Paris* (*ex Bauhin*).

Helenium indicum tuberosum; *Bauh. Pinax.* p. 277 (1671).

Chrysauthemum canadense, *F. Schuyl, Cat. Pl. Hort. Lugd. Bat.* (1672).

C. perenne majus, *Moris. Plant. Hist.* vol. iii. p. 23, t. 6 (1699).

Helenium Canadense; *P. Amman, Char. Pl. Nat.* p. 280 (Ed. 1685).

Helianthemum radice tuberosa; *Linn. Hort Cliff.* p. 419 (1737). *Mill Gard. Dict. Ed.* 4, Vol. ii.

Specimens of the Jerusalem Artichoke, raised from undoubtedly indigenous tubers, which have been kindly forwarded by the Rev. C. Wolley Dod, from his rich garden of herbaceous plants, afford me the opportunity of giving in

the *Botanical Magazine* a sketch of the early history of this valuable esculent. For the means of doing this I am much indebted to "Notes on the History of *Helianthus tuberosus*," by J. Hammond Trumbull and Asa Gray, contributed to the American Academy of Sciences in 1877.

The said History may, like that of mankind, be regarded under three divisions, a traditional, an early botanical, and a mediæval and modern. Of these the traditional resolves itself into the fact of its having been cultivated as an article of food by the Indians of North America before the settlement in that country of Europeans. The earliest evidence of this cited by Mr. Trumbull, is that derived from Champlain, who in 1605–6, observed that the Almonchiquois Indians (of New England) had "force des racines qu'els cultivent, lesquelles ont le goût d'Artichaut." To this Mr. Trumbull adds, that it is to these roots that Lescardot alludes ("Hist. de la Nouv. France" (1612) when, speaking of the same Indians and their country, he says that the latter contains a kind of roots "grosses comme naveaux, tres excellent à manger, ayans un goût retirant aux cardes, mais plus agréable, lesquelles plantées multiplient en telle façon que c'est merveille." Following these is Sagard Theodat, who, in his "Histoire des Canada" (1636) mentions the roots which we, the French, call "Canadiennes, or Pommes de Canada."

Proceeding now to the mediæval history, or that of the cultivation of this plant in Europe, it seems to have been introduced into England very shortly after, if not before it had attracted the attention of travellers as being propagated by the Indians in America as a food product, for in the year 1617 Mr. John Goodyer of Maple Durham, Hampshire, received two small roots of it from Mr. Franquevill of London, which being planted, enabled him before 1621 "to store Hampshire." In October of the same year Mr. Goodyer wrote an account of it for T. Johnson, who printed it in his edition of Gerard's "Herball," which appeared in 1636, where it is called "Jerusalem Artichoke." Previous to which, in 1629, it had been figured and described under that name by Parkinson in his "Paradisus" and "Theatrum."

From the last given date to the present time the Jerusalem Artichoke has been extensively cultivated in Europe,

but rather as a garden vegetable than a field crop, and has extended into India, where it is making its way amongst the Natives under Hindoo, Bengali, and other native names. In Káthiawar, according to Watt ("Dict. of Economic Products of India") it is boiled in milk, and considered by the natives to be a strengthening vegetable. Aitchison states that it is grown in gardens of Herat and Meshed under the Persian name of Seb-i-zamini-angrez. (Notes and Products of W. Affghan. and N.E. Persia in "Trans. Bot. Soc. Edinb." vol. xviii.)

It is very curious that the native country of a plant so well known in gardens and in a wild state throughout the length of the Central United States and in Canada, should have for upwards of 250 years been considered doubtful. This was owing mainly to the vague indications of its origin given by the early authors, Brasil (following Bauhin) by Linnæus in the "Species Plantarum," Canada by Parkinson, and by Linnaeus in his "Hortus Cliffortianus," and Peru according to Hernandes. In De Candolle's "Geographie Botanique" (vol. ii. p. 983) it is referred to the list of "Espèces inconnues à l'ètat sauvage," and subsequently (p. 988) as "probably North America." Even in the body of the third edition of his admirable "Origine des Plantes Cultivées" (p. 34), published in 1886, he regards the question as unsettled; and in the additions and corrections cites Gray's erroneous opinion that it is the *Helianthus doronicoides*, Torr. & Gr. And yet, though there have been no lack of indigenous specimens in European Herbaria, identical with the cultivated, no one seems to have thought of going to the Herbarium to solve the difficulty.

In 1855 Asa Gray's attention was drawn to the subject from having received some long narrow tubers, which he considered to be *Helianthus doronicoides*, Lamk., with the statement that it had been found to be good food for hogs. These were planted in the Cambridge (U.S.) Botanical Gardens, and were found to produce, after two or three years, thicker and shorter tubers, which, when cooked, resembled Jerusalem Artichokes in flavour, though coarser. This led Dr. Gray to conclude that *H. doronicoides* was most probably the original of *H. tuberosus*, an opinion which was strengthened by subsequent observations published in

the second edition of his "Manual of the Botany of the N. Un. Sts. (1856)." Matters, however, did not end here, for it was discovered that the *H. doronicoides*, Lamk., as described by American botanists, included two species, that so called, and the true *H. tuberosus*, Linn., and it was not till the publication in 1884 of the Order Compositæ in Gray's "Synoptical Flora of N. America" that *H. tuberosus*, Linn., was definitely restored to its rank as a substantive species, and the origin of the Jerusalem Artichoke. I may add that *H. doronicoides* differs from *tuberosus* in the leaves being all, or nearly all, opposite, sessile, elliptic, never cordate, obscurely crenate, the rays much broader, and the ovary and achene glabrous. It is figured in this work, t. 2778, under the erroneous name of *H. pubescens*, Vahl.

It remains to add that *H. tuberosus* is indigenous in the Lake region of Canada, as far west as the Saskatchewan, and from thence southward to Arkansas and the middle parts of Georgia. Another near ally is *H. giganteus*, Linn., of which a figure has been prepared for this work, which will shortly appear.

Descr.—*Helianthus tuberosus* is distinguished from all its congeners, by the sum of the following characters: roots tuberous; stem tall, pubescent, branched above; leaves petioled, ovate, acuminate, serrate, scabrous above, puberulous beneath, the upper alternate; heads large; invol. bracts, lanceolate, acuminate; receptacle convex with dorsally hirsute scales; disk and ray-flowers both yellow, the latter 12–20 in number; achenes with pubescent tips and margins.—*J. D. H.*

Fig. 1, Involucral bracts; 2, achene pappus and base of ray-flower; 3, scale of receptacle and disk-flower; 5, stamens; 6, style of disk-flower; 7, ripe achene: all but 1 enlarged; 8, root-tubers *half of the natural size.*

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Tab. 7546.

LISSOCHILUS milanjianus.

Native of Central Africa.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Lissochilus, *Br.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 536.)

Lissochilus *malanjianus*; pseudobulbis catenatim dispositis amorphis ovoideis oblongisve, foliis hysteranthiis linearibus elongatis acuminatis 3-nerviis coriaceis supra canaliculatis, racemo multifloro, scapo rachique robustis viridibus, bracteis lanceolatis ovarium sub-æquantibus, floribus 1½-poll. expans., sepalis subæqualibus oblongis apiculatis intus rubris, lateralibus basi labelli insertis, petalis amplis orbiculatis cuspidatis nervosis extus aureis intus sanguineis, labelli sessilis lobis lateralibus parvis rotundatis extus pallidis intus sanguineis, terminale ovato infra medium 5-cristato cristis aureis, dein ad apicem sanguineo, calcare late infundibulari obtuso.

L. milanjianus, *Rendle in Trans. Linn. Soc. Ser.* 2, vol. iv. (1894) p. 46.

Eulophia bella, *N.E. Br. in Gard. Chron.* 1889, vol. ii. p. 210.

Lissochilus milanjianus was discovered in 1861, by the late C. J. Meller, Esq., F.L.S., when accompanying Dr. Livingstone in his second expedition to the Zambesi; the habitat given is Manganja Hills, which I take to be a range on the Western side of Lake Nyassa, in about lat. 12° S. It was next found (in 1890) in Uganda, under the line, in British Central Africa, by the late Mr. Buchanan, C.M.G., who sent plants to the Royal Gardens, Kew, that flowered in September, 1892. More recently it has been found by Mr. Whyte in the Milanji Hills, not far from Blantyre, south of Lake Shirwa, in lat. 16° S.; and much further south, near Umtala, in Mashona Land, lat. 18° S., long. 32½° East, by a hospital nurse, who gave the tubers from which the flowering specimen here figured was raised, to P. F. Garnett, Esq., of South Bank, Grassendale, Liverpool. The plant has been twice independently described in 1889, by Mr. N. E. Brown as a *Eulophia*, and in 1894 by Mr. Rendle under the name here adopted. Mr. Garnett's plant flowered in March, 1896; Mr. Buchanan's, as above stated, in September, 1892. The tubers and leaves here represented are those of Mr. Buchanan's plant.

July 1st, 1897.

Mr. Brown's description was taken from a specimen flowered by Mr. Gumbleton, who received it from Mr. O'Brien of Harrow.

Descr.—*Pseudobulbs* forming subterranean chains, broadly ovoid, oblong, or amorphous, one to two and a half inches in diameter or more, emitting very stout worm-like roots. *Stem* short, base sheathed. *Leaves* few, produced after flowering, a foot or more long, by three-quarters of an inch broad, rather thick, linear, acuminate, bright green and deeply channelled in the middle above, pale and strongly three-nerved beneath. *Scape* one to two and a half inches high, stout, all green, or mottled with purple; sheaths acute, lower crowded, upper distant. *Raceme* erect, ten- or more-fld.; rachis stout, strict; bracts lanceolate, green, about an inch long, that is as long as the pedicel and ovary. *Flowers* one and a half inches across the spreading petals. *Sepals* about half an inch long, subequal, oblong, apiculate, green without, dull red within. *Petals* orbicular, three-quarters of an inch in diameter, apiculate, strongly veined, golden-yellow without, carmine with darker nerves within. *Lip* sessile at the foot of the column, including the spur funnel-shaped; spur pale, slightly incurved, obtuse; side-lobes rounded, pale without, carmine within; mid-lobe short, ovate or broadly tongue-shaped, decurved, basal half golden-yellow with five smooth keels, tip blood-red. *Column* short, stout. *Anther* obtusely beaked. *Pollinia* globose, on the top of a short, stout stipes, which is attached to a broad disciform gland. *J. D. H.*

Fig. 1, Column; 2, anther; 3 and 4, pollinia:—*All enlarged.*

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„ [illegible]

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„ [illegible]

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Tab. 7547.

LYCORIS SQUAMIGERA.

Native of Japan and China.

Nat. Ord. Amaryllideæ.—Tribe Amaryllæ.

Genus Lycoris, *Herb.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 627.)

Lycoris *squamigera*; bulbo globoso magno tunicis membranaceis brunneis, foliis vernalibus loratis obtusis viridibus flaccidis glabris, floribus umbellatis post folia productis, scapo elongato robusto solido tereti, umbellis 4–8-floris, pedicellis brevibus, spathæ valvis parvis ovato-lanceolatis scariosis, perianthii rosei tubo subcylindrico squamis 6 truncatis ad faucem prædito, lobis oblanceolato-oblongis tubo 2–3-plo longioribus, staminibus declinatis lobis paulo brevioribus, stylo exserto.

L. squamigera, *Maxim. in Engl. Bot. Jahrb.* vol. vi. (1885), p. 79. *Baker Handb. Amaryllid.* p. 40. *S. Wats. in Garden & Forest*, vol. iii. (1890) p. 176, fig. 32. *Gard. Chron.* 1897, vol. i. p. 137, fig. 38.

Amaryllis Hallii, *Hort. Hovey.*

The genus *Lycoris* is nearly allied to *Hippeastrum*, and differs from *Amaryllis* mainly in its seeds, which have an opaque black testa, and are more or less compressd. All the species inhabit Japan and China, whilst *Amaryllis* is confined to the Cape, and *Hippeastrum* to tropical America. The present plant in habit and the colour of its flowers much resembles *Amaryllis Belladona*. We have in the Kew Herbarium a cultivated specimen collected by Maximovicz near Yokohama in 1862. It is figured in the *Somokou-Zusetsu*, a series of coloured figures of Japanese plants in many volumes by the Japanese artist Yokoussai, under the name of *Jagatara-Suisen*. In consequence, however, of there being an English numbering of the figures, and a Japanese numbering of the folios of that work, Maximovicz cites the Japanese name of *L. aurea*, Vol. v. fol. 61, for his species (fol. 63). There is also a good figure of this species in the Hongo Zufu, vol. vii. fol. 34, recto.

L. squamigera was introduced in a living state from China by Dr. G. Hall of Bristol, Rhode Island, and was sent out widely by Messrs. Hovey of Boston,

under the name of *Amaryllis Hallii*. Dr. Hall had it in his garden at Shanghai before 1860, and states that it is often used by the Chinese to decorate their cemeteries. Our drawing was made from plants that flowered in the Royal Gardens, Kew, in 1897. It was first received from Mr. Max Leichtlin in 1885. In 1895 a large supply of bulbs was purchased from a Japanese nurseryman, and these were planted in an open border against the south wall of a stove, where they have flourished and flowered freely.

Descr.—*Bulb* globose, two inches in diameter; outer tunics brown, membranous. *Leaves* fully developed in April, lorate, obtuse, bright green, glabrous, rather fleshy, a foot and a half long, dying down at the end of summer. *Peduncle* developed in July, stout, solid, terete. *Flowers* four to eight in an umbel; pedicels short; spathe-valves two, small, ovate-lanceolate. *Perianth* bright pink, three or four inches long; tube subcylindrical, with six small truncate scales at its throat, just above the insertion of the stamens; lobes oblanceolate-oblong, obtuse, spreading from above the middle. *Stamens* declinate, rather shorter than the perianth-limb. *Ovary* globose; style declinate, simple, protruded beyond the anthers.—*J. G. Baker.*

Fig. 1, perianth-segment, with stamen, *natural size;* 2, front view of anther; 3, back view of anther; 4, apex of style; 5, horizontal section of ovary: *all enlarged.*

M.S. del, J.N. Fitch lith.

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TAB. ~~7549.~~ ~~7648~~

GASTERIA FUSCO-PUNCTATA.

Native of Cape Colony.

Nat. Ord. LILIACEÆ.—Tribe ALOINEÆ.

Genus GASTERIA, *Duval*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 775.)

GASTERIA *fusco-punctata*; breviter caulescens, foliis 20–30 dense rosulatis lanceolatis strictis brevibus viridibus maculis copiosis fuscis decoratis latere dextero duplicato-marginatis, racemis multis laxis in paniculam amplam dispositis, pedicellis brevibus cernuis, bracteis lanceolatis minutis, perianthii tubo oblongo ventricoso rubello, limbi lobis linearibus viridi tinctis, staminibus inclusis, ovario cylindrico, stylo ovario longiore.

G. fusco-punctata, *Baker in Journ. Linn. Soc.* vol. xvi. p. 195; *Fl. Cap.* vol. vi. p. 390.

This is one of the finest of all the Gasterias. In its multifarious rosette of long leaves and ample panicle it resembles *G. Croucheri* (*Aloe Croucheri*, Hook. f. in Bot. Mag. tab. 5812), but the flowers are much smaller, and the leaves conspicuously spotted with brown. It was not known to Salm-Dyck and Haworth, and it is here figured for the first time. It was discovered by Mr. Thomas Cooper about 1860, but the precise locality is not known. Our drawing was made from a plant flowered at Kew last July, which has a more compound panicle than the one which I first saw in the collection of the late Mr. Wilson Saunders at Reigate about the year 1870. In cultivation it needs the same treatment as the other members of the genus, which contains about fifty species, and is entirely restricted to the Cape.

Descr.—*Stem* shortly produced below the rosette of leaves. *Leaves* twenty or thirty, forming a dense multifarious rosette, lanceolate, a foot or more long, three or four inches broad low down, tapering gradually to the deltoid-cuspidate apex, very smooth, dull green, with copious irregularly scattered superficial brown spots, furnished with a conspicuous double border on the right hand side, looking upwards from the base. *Peduncle* with panicle three or four feet long. *Racemes* lax, cylindrical; pedicels short, cernuous; bracts lanceolate, minute.

AUGUST 1ST, 1897.

Perianth an inch long, bright pink; tube oblong, ventricose; lobes of the limb linear, more or less tinged with green. *Stamens* shorter than the perianth; anthers oblong, small. *Ovary* cylindrical, trigonous; style longer than the ovary. *Capsule* cylindrical, nearly as long as the perianth.—*J. G. Baker.*

Fig. 1, A flower; 2, back view of anther; 3, front view of anther; 4, pistil: *all enlarged*; 5, whole plant, *much reduced.*

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M.S. del. J.N. Fitch lith.

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TAB. ~~7548~~ 7549

DENDROBIUM DENUDANS.

Native of the Himalaya.

Nat. Ord. ORCHIDEÆ.—Tribe EPIDENDREÆ.

Genus DENDROBIUM, *Sw.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 498.)

DENDROBIUM (Stachyobium) *denudans*; dense cæspitosum, caulibus elongatis internodiis subpseudobulbosis foliosis, foliis deciduis lineari-oblongis-lanceolatisve apice acutis v. 2-dentatis, racemis axillaribus terminalibusque elongatis gracilibus nutantibus multifloris, sepalis e basi ovata lanceolatis acuminatis v. caudato-acuminatis, petalis angustioribus oblanceolatis, mento incurvo obtuso, labello sepalis dimidio breviore, lobis lateralibus incisis, intermedio ovato marginibus incurvis crispato-undulatis et crenato-dentatis, disco 2-lamellato.

D. denudans, *D. Don Prodr. Fl. Nep.* p. 24. *Wall. Cat.* n. 2014 (*partim*). *Lindl. Gen. & Sp. Orchid* 84; *in Bot. Reg.* 1838, *Misc.* p. 84, and 1844, p. 61; *in Journ. Linn. Soc.* vol. iii. p. 19. *Hook. f. Fl. Brit. Ind.* vol. v. p. 715; *in Ann. Roy. Bot. Gard. Calcutt.* vol. v. p. 4, t. 6.

Dendrobium denudans is one of three very closely allied species, natives of the temperate regions of the Himalaya, which indicate the westernmost limit of the vast Asiatic genus to which they belong. Judging from dried specimens and drawings all three, namely, *D. alpestre*, Royle, *D. eriaflorum*, Griff., and the plant here figured, are very variable in size, in the length of the raceme, and number of flowers, and in the size and coloration of the latter, from pure white, with a little purple on the lip, to a decided green.

D. denudans was discovered by Dr. Wallich in Nepal in 1821. It was introduced, probably from the Khasia Hills, into the Duke of Devonshire's garden at Chatsworth by Mr. Gibson, when collecting in India for the Duke. It flowered there in 1838, and was described by Lindley as bearing a profusion of green and white nodding racemes. In 1844 Lindley again describes it, as a species most variable in size, but always to be distinguished by the loose membranous sheaths which persist on the stem after the leaves fall off; the sepals and petals elongate, pale, yellow-white, or greenish-white, lip green, whole-coloured.

AUGUST 1ST, 1897.

The same sheaths may, however, be observed in *D. alpestre* and *eriæflorum*, the former of which is distinguished by its small size and erect few-fld. peduncles; and *D. eriæflorum*, which abounds in the Khasia Mts., and is common in Sikkim, by the short scapes, and much shorter, broader, green sepals and petals.

There are copious specimens of *D. denudans* in the Kew Herbarium from various localities, extending from Kumaon to Sikkim at elevations of 4000–5500 ft. The specimen here figured was collected on oak trees near Mussoorie in Garwhal at 5–6000 ft. elevation, and sent to the Royal Gardens by Mr. Duthie, Director of the Bot. Dept., N. India. It flowered in September, 1896.

Descr.—*Stems* densely tufted, four to sixteen inches long, leafy, clothed with membranous sheaths; internodes more or less pseudobulbous. *Leaves* two to three inches long, linear-oblong or oblong-lanceolate, acute, or tip 2-toothed, pale green, membranous, deciduous, paler beneath, and keeled by the midrib. *Flowers* in terminal and axillary very slender nodding many-fld. racemes three to six inches long; bracts lanceolate, shorter than the pedicels. *Sepals* spreading, lanceolate from an ovate base, subfalcate, finely acuminate, white or pale green. *Petals* shorter, and much narrower than the sepals, oblanceolate, white. *Mentum* short, incurved, tip rounded. *Lip* about one-third shorter than the sepals; side-lobes short, inciso-serrate, white or greenish, streaked with red; midlobe ovate, strongly recurved, sides incurved, undulate, crisped and crenate, white or pale green, with purple margins. *Column* entire. *Anther* with the margin minutely erose in front.—*J. D. H.*

Fig. 1, Column and lip; 2, column; 3, anther; 4, pollinia:—*All enlarged.*

M.S. del. J.N.Fitch Lith

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Tab. 7550.

FICUS erecta, *var.* Sieboldii.

Native of Japan.

Nat. Ord. Urticeæ.—Tribe Artocarpeæ.

Genus Ficus, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 367.)

Ficus *erecta* var. *Sieboldii*; frutex v. arbuscula, ramulis glabris puberulisve, foliis lineari-oblongis-lanceolatisve acuminatis integris v. hic illic lobulatis basi rotundatis truncatis cordatisve supra glabris subtus puberulis v. asperulis, stipulis ovatis acuminatis, receptaculis solitariis geminisve longe pedunculatis globoso-pyriformibus coloratis in stipitem elongatum basi contractis, bracteis ad basin stipitis 3 minutis triangulari-ovatis, fl. masc. in eodem receptaculo cum galliparis subsessilibus 1–3-andris, sepalis 3 lanceolatis acuminatis, fl. fertil. subsessilibus, sepalis 4, stylo crassiusculo, stigmate 2-lobo.

F. erecta, *Thunb. Diss. Ficus*, p. 9; *in Trans. Linn. Soc.* vol. ii. p. 327. *King, Annals Bot. Gard. Calcutt.* vol. i. p. 141, t. 178.

Var. Sieboldii, *King, l. c.* p. 142, t. 178, f. B.

F. Sieboldii, *Miquel, Ann. Mus. Bot. Lugd. Bat.* vol. ii. p. 199, et iii. p. 295. *Maxim. in Bull. Acad. Petersb.* vol. xi. p. 327.

According to Dr. King's account of *Ficus erecta* in his invaluable monograph of the Eastern Asiatic Figs, it is an extraordinarily variable plant, and but for the evidence he adduces it would be difficult to believe that the forms he figures belong to one and the same species. In habit *F. erecta* varies from a shrub to a small tree, with nearly glabrous, pubescent, or almost strigose branchlets, leaves and receptacles. The leaves vary from broadly ovate, obovate, elliptic, or subrhomboid, to the narrow form of those of var. *Sieboldii*, and are quite entire, or here and there lobulate, or rather coarsely toothed above the middle. The receptacles are solitary, or in pairs, glabrous or hispidulous, peduncled or subsessile on the branchlets, either globose and not stalked, or pyriform and narrowed into a long stalk.

Of *F. erecta* Dr. King makes 2 varieties, namely—

Var. *Beecheyana*, King (*F. Beecheyana*, Hook. et Arn. Bot. Beech. Voy. p. 271), a native of Japan, Formosa,

and Hong Kong, of which specimens in Kew Herbarium from the Loo Choo Islands have leaves ten inches long by two and a half inches broad, and fruits two-thirds of an inch in diameter.

Var. *Sieboldii*, King, of which there are two subvarieties: a Japanese, that here figured; and one (which I have not seen) from the Sikkim Himalaya, and Khasia Hills in Bengal, with the leaves hispidly hairy beneath.

The specimens of var. *Sieboldii* here figured are from a large bush in the Temperate House of the Royal Gardens, received in 1878 from the late Dr. Schomburg, Director of the Adelaide Botanical Gardens, and which fruits in the summer months.

Descr. of var. *Sieboldii.*—A bush or small tree, glabrous, or with the branchlets and leaves slightly hairy. *Leaves* six to eight inches long, linear- or oblong-lanceolate, acuminate, thin, smooth or slightly scabrid, dark green above, entire, or rarely with a lobe on one or both margins; base rounded, cuneate, or cordate, and three to five-nerved. *Fruit* solitary or binate, long-peduncled, half an inch in diameter, globosely pyriform, narrowed into a peduncle as long as itself, yellow and red. *Peduncle* one and a half inches long, green, with 3 minute bracts at the top.—*J. D. H.*

Fig. 1, Vertical section of fruit; 2, female fl.; 3, ovary :—*All enlarged.*

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Tab. 7551.

CYNORCHIS PURPURASCENS.

Native of the Mascarene Islands.

Nat. Ord. Orchideæ.—Tribe Ophrydeæ.

Genus Cynorchis, *Thou.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 628.)

Cynorchis *purpurascens*; tuberibus cylindraceis, folio solitario (v. 2, unico parvo) sessili lanceolato v. lineari-oblongo acuminato 7–∞ nervi basi convoluto vagina brunnea truncata appressa instructo, nervulis trabeculatis, scapo 2–10-floro medio vaginato, bracteis lanceolatis setaceo-acuminatis haud inflatis, ovario gracili 2-pollicari sparse glanduloso-piloso, sepalis concavis, dorsali hemispherico roseo, lateralibus duplo majoribus oblongis apice rotundatis viridibus, petalis erectis oblongo-lanceolatis obtusis inæquilateralibus roseis, labelli ampli rosei ungue lato lobis lateralibus dimidiato-ovatis, intermedio obovato lateralibus paullo longiore ad medium bifido, calcare labio æquilongo apice fusiforme, clinandrio reclinato, rostello decurvo, antheræ tubulis rostello longioribus, loculis dorso ad basin columnæ affixis, polliniarum caudiculis filiformibus.

Cynorchis purpurascens, *Lindl. Gen. & Sp. Orchid.* 331. *Baker Fl. Maurit.* p. 337.

C. Lowiana, *Reichb. f. in Gard. Chron.* 1888, vol. i. p. 424.

Cynosorchis purpurascens, *Thou. Orch. Ins. Afric. Ic.* t. 15; tab. 8. p. 1 *purpurea*).

Gymnadenia purpurascens, *A. Rich. in Mem. Hist. Nat. Par.* vol. iv. (1828) p. 27, t. 6, f. I. (*anal. erron.*) *Bojer, Hort. Maurit.* p. 311.

The genus *Cynorchis* is so closely allied to *Habenaria* that it appears to me to be doubtful how far it may prove to be distinguishable when the latter genus shall be either dismembered or divided into stable groups. The character chiefly depended on for *Cynorchis* is the large complicate midlobe (so called) of the 3-lobed rostellum, which organ, in the species here figured, does not well answer to this description, for what I take to be the side-lobes of the rostellum I should refer to the sides of the column, the true rostellum being a triangular, decurved and concave, but not plicate body. A more important distinction from *Habenaria* may prove to be the reclinate clinandrium, with the pollen-cells placed at the very base of the back of the column. To understand, however, the complicate nature of the latter organ in *C. purpurascens*, it is necessary to refer to the analyses here given, which

are explained in the reference to the plate at the end of the description. The apex of the column (*e* in figs. 3 and 4) varies greatly in length, in one specimen I found it produced into a spur at the back of the column.

C. purpurascens is a native of Madagascar, Bourbon, and formerly of the Mauritius, where it is probably now extinct. It varies greatly in stature, robustness, breadth of leaf, and number of flowers, from two to ten; and in the size of these, to somewhat larger, or a third smaller than are those here represented. The specimen figured was procured by the Royal Gardens, Kew, from Messrs. Hugh Low & Co. in 1894. It flowered in a stove in November, 1896. It was described as *C. Lowiana* eight years previously by Reichenbach, but Mr. Rolfe has pointed out its identity with the plant of Thouars, figured in 1822.

Descr.—*Leaf* solitary (or with a reduced second), six to eight inches long, by one to three broad, lanceolate or oblong-lanceolate, finely acuminate, seven to many-nerved; base convolute, and wrapped in a cylindric, red-brown, truncate sheath. *Peduncle* stout or slender, six to ten inches long, with a lanceolate sheath, red-brown, two to ten-flowered; bracts about an inch long, erect, lanceolate, tip setaceous. *Ovary* with the very short pedicel two inches long, slender, curved, sparsely glandular-hairy. *Sepals* membranous; dorsal about a quarter of an inch long, galeate, hemispheric, green and red; lateral half an inch long, oblong, concave, obtuse, pale green. *Petals* as long as the dorsal sepal, and conniving with it, ovate-lanceolate, obtuse, unequal sided, rose-colrd. *Lip* one and a quarter inch long or less, obovate from a broad claw, bright rose-red, three cleft; side-lobes dimidiate-ovate, obtuse; mid-lobe obovate, cleft to the middle; spur as long as the lip, slender, green, tip clavate. *Column* short, rose-pink.—*J. D. H.*

Fig. 1, Lateral sepal; 2, petal; 3, front, 4, side, and 5, dorsal view of column; *a.* rostellum, *b.* side-lobes of column (or of rostellum), *c.* glands of caudicle of pollinia, *d.* stigmatic lobes, *e.* apex of column, *f.* glands representing staminodes, *g.* mouth of spur:—*All enlarged.*

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Tabs. 7552, 7553.

SCHEELEA KEWENSIS.

Native of tropical America.

Nat. Ord. Palmeæ.—Tribe Cocòineæ.

Genus Scheelea, *Karst.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 947.)

Scheelea *kewensis*; trunco robusto obscure annulato infra folia basibus petiolorum vetustorum onusto, foliis 25-pedalibus breviter petiolatis patenti-recurvis pinnatisectis, segmentis decurvis 2½–3-pedalibus 1–1½ poll. latis ad basin versus rachi subsolitariis medio subternis apicem versus subquaternis longe acuminatis basi incrassatis supra carinatis laete viridibus subtus pallidioribus, nervis obscuris, rachi valida pentagona dorso rotundata appresse purpuracea, floribus in spathis diversis monoici, spathis 2½ pedalibus breviter crasse pedunculatis erectis cymbiformibus rostratis fuscis lignosis, spadicibus simpliciter ramosis, *masc.* ramis densissime fasciculatis 4–6-pollicaribus strictis deflexis, rachibus flavis ad basin floriferis, floribus confertis, sepalis minutis ovatis, petalis elongato-cylindraceis apice rotundatis fere ½ poll. longis purpureis, staminibus 6, filamentis æquilongis anthera lineari brevioribus; *fl. fem.* quam *masc.* multo majoribus subsessilibus ovoideis, bracteola lanceolata paucidentata suffultis, sepalis ovatis obtusis crassis, petalis paullo latioribus, disco cupulari, stylo crasso, stigmatibus brevibus recurvis, fructu 3 poll. longo, ovoideo breviter crasse rostrato basi disco sepalis petalisque valde auctis vaginato abortu 1-spermo.

The larger Palms so rarely produce flower, and still more rarely fruit in our tropical Palm Houses, that it appears to me expedient to figure such as fulfil these conditions in the Royal Gardens, Kew, even when, as in this case, I am unable to identify them specifically. That the Palm here figured belongs to the genus *Scheelea*, which was founded by Karsten on the species of *Maximiliana*, Mart., with long narrow petals, is obvious. A near congener is *S. Princeps*, Karst., in Linnæa, vol. xxviii. p. 269 (*Attalea Princeps*, Mart., Palmet., Orbign., p. 113, t. 31), in which, besides other differences, the fruit is not beaked. It has flowered but once, when it produced two spathes, the lower male (of which the pollen was kept) in August, 1895, and the upper female (to which the pollen was applied) in the following October. The fruit did not completely ripen.

September 1st, 1897.

As regards the history of this fine Palm, which has been for many years growing in the Palm House of Kew, I can throw no further light than that it has always borne the erroneous name of *Maximiliana regia*, and is hence, no doubt, one of three plants so called in J. Smith's "Records of the Royal Botanic Gardens, Kew," for which he gives as their origin, "ex Hort. Belg. *Van Houtte*, 1847; Demerara, *Schomburg* and *Boughton*, 1847; Para, *Yates*, 1847. The only other remark on this subject is at p. 111 of the same work, where (writing in (1880) the author says, under *M. regia*, "similar in habit and mode of growth to *Attalea amygdalina*, plants with leaves ten feet in length."

Descr.—Whole plant twenty-five ft. high from the ground to the level of the coma; trunk from the ground about eight ft. to the lower leaves, three ft. in girth, dark brown, or nearly black, clothed with the bases of old petioles. *Leaves* very many, spreading and decurved, twenty-five feet long, very shortly petioled; leaflets crowded, in three ranks, spreading and decurved, with pendulous tips, solitary towards the base of the rachis, in threes to fives towards the middle, and solitary near the top, about three feet long, by one to one and a half in. broad, finely acuminate, base thickened, bright green, convex and keeled above, pale beneath; rachis stout, five-angled, about an inch broad in the middle part, dorsally rounded and clothed with a fine closely appressed grey-purple scurf, sides flat green, upper surface concave bright green, with acute edges and a median low ridge. *Spathes* two, unisexual, (? always), in the axils of the leaves, an upper fem. and lower male, shortly stoutly peduncled, two and a half feet long, cymbiform, shortly stoutly beaked, woody, yellow-brown. *Male spadix* eighteen inches long, erect, densely clothed with strict, deflexed fascicled branches, the rachis and racheolæ of which are bright yellow, the flowers a bright vinous purple; male fl. crowded on the branches of the spadix sessile, nearly half an inch long. *Sepals* minute, ovate. *Petals* many times longer, cylindric, rugulose, tip rounded. *Stamens* three, anthers about half the length of the petals, and twice as long as their filaments. *Fem. fl.* much larger than the male, very shortly stoutly pedicelled,

ovoid, yellow, each with a lanceolate, more or less serrate bract as long as itself. *Sepals* broadly ovate, obtuse, fleshy. *Petals* shorter, broader. *Disk* fleshy. *Style* very stout, stigmas short, recurved. *Fruit* three in. long, elongate-ovoid, beaked, 1-seeded, surrounded at the base by the greatly enlarged sepals, petals, and disk.—*J. D. H.*

Tab. 7552, Portion of rachis of leaf and leaflet of *nat. size*; 2, male spathe and spadix *one-third nat. size*; 3, branch of do. *nat. size*; 4, male fl.; 5, stamens; 6 and 7, front and back view of single stamen:—*All enlarged.*

Tab. 7553, Reduced fig. of whole plant; fig. 1, fem. fl. and bract; 2, the same, side view; 3, fem. petals style and stigma; 4, disk with ovary; *all enlarged.*—5, two fruits; 6, transverse, and 7, longitudinal section of fruit; 8, seed; 9, embryo:—*All of nat. size.*

M.S.del J.N.Fitchhth

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Tab. 7554.

CIRRHOPETALUM Curtisii.

Native of the Straits of Malacca.

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Cirrhopetalum, *Lindl.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 504.)

Cirrhopetalum (Umbellatæ) *Curtisii*; rhizomate elongato repente, pseudobulbis parvis ovoideis vaginis brunneis tectis, folio lineari-oblongo apice subacuto recurvo utrinque pallide viridi dorso vix carinato, scapo a basi pseudobulbi erecto gracili infra medium vaginis paucis parvis instructo, floribus vix $\frac{1}{2}$ poll. longis confertim umbellatis deflexis roseis, bracteis setaceis, pedicellis floribus brevioribus, sepalo dorsali fere orbiculari ciliato apice longe aristato, arista ciliata, lateralibus lineari-oblongis obtusis ultra basin in laminam late oblongam recurvam convexam cohærentibus, petalis sepalum dorsale æquantibus longe ciliatis, labello ovato-oblongo obtuso aurantiaco, columna apice truncata sublobata.

Cirrhopetalum Curtisii belongs to a very distinct section of the umbellate flowered species of the genus, characterized by the ciliate and awned dorsal sepal and petals. The only species of this section previously figured in this work is *C. Cumingii*, Lindl. (Tab. 4996) of the Philippine Islds., a much larger plant, with long, narrow, acuminate lateral sepals. There are, however, three described Indian species much more closely allied to *C. Curtisii*, namely, *C. Roxburghii*, Lindl. (Hook. Ic. Pl. t. 1057 A), *C. gamosepalum*, Griff. (Ann. Bot. Gard. Calcutt. vol. v. p. 17, t. 26), and *C. concinnum*, Hk. f. (Hook. Ic. Pl. t. 2060 B), all which differ in the colour of the flowers, and except in the case of the last named species, in their much larger size. To these must be added an unpublished species, *C. pulchellum*, Ridley mss. in Herb. Kew, from Singapur, with smaller, broadly ovoid pseudobulbs, fewer differently coloured flowers in the umbel, and longer lateral sepals than has *C. Curtisii*.

C. Curtisii was sent to the Royal Gardens, Kew, in 1895, by Mr. Curtis, F.L.S., Superintendent of the Garden and Forest Department, Penang, bearing the ticket "*Cirrhopetalum*, Sp. Panga" (perhaps the Island of

Panyang on the coast of Malacca). It flowered in a stove of the Royal Gardens in December, 1896.

Descr.—*Rhizome* flexuous, about one-eighth of an inch in diameter, clothed with appressed brown scales. *Pseudobulbs* about an inch apart, two-thirds of an inch long, ovoid, green, clothed with brown sheaths. *Leaf* four to four and a half inches long, by nearly an inch broad, linear-oblong, tip subacute recurved, very coriaceous, yellowish green on both surfaces, midrib sunk above, hardly keeled beneath. *Scapes* solitary from the base of the pseudobulbs, three to four inches long, very slender, decurved, pale green, with a few small scattered sheaths tipped with brown below the middle. *Flowers* numerous, in a crowded umbel, hardly half an inch long, dorsal sepal and petals bright rose-colrd., lateral sepals paler, fading into white beyond the middle; lip bright yellow. *Dorsal sepals* and *petals* very small, of nearly equal size, sub-orbicular, long-ciliate, tip of dorsal sepal long-awned, awn ciliate, about one-third of an inch long. *Lateral sepals* linear-oblong, obtuse, coherent from beyond the base into a very convex, broadly oblong, recurved blade, notched at the rounded tip. *Lip* ovate-oblong, recurved, grooved down the centre. *Column* truncate, tip obscurely lobed.—*J. D. H.*

Fig. 1, Flower seen in front; 2, the same from the side; 3, petal; 4, column and lip; 5, anther; 6, pollinia:—***All enlarged.***

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Tab. 7555.

HELIANTHUS GIGANTEUS.

Native of North America.

Nat. Ord. Compositæ.—Tribe Helianthoideæ.

Genus Helianthus, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 376.)

Helianthus *giganteus*; 6–10-pedalis, asperulus, superne ramosus, rhizomate repente radicibus incrassatis, foliis alternis sessilibus v. breviter petiolatis lanceolatis oblongo-lanceolatisve acuminatis basi angustatis serratis subserratisve penninerviis, capitulis $2\frac{1}{2}$–$3\frac{1}{2}$ poll. latis subcorymbosis, involucri bracteis subæqualibus lineari-lanceolatis acuminatis laxe appressis hispidis, receptaculi squamis dorso pubescentibus, radii ligulis 15–20, 1–$1\frac{1}{4}$ pollicaribus, fl. disci aureis glaberrimis.

H. giganteus, *Linn. Sp. Pl.* 905. *Ait. Hort. Kew.* vol. ii. p. 409. *DC. Prodr.* vol. v. p. 589. *Torr. & Gray Fl. N. Amer.* vol. ii. p. 325 (*excl var. β*). *Hook. Fl. Bor. Am.* vol. i. p. 312. *A. Gray, Bot. N. Un. St.* Ed. 5, p. 256; *Synopt. Fl. N. Am.*; *Gamopet.* p. 276.

H. altissimus, *Linn. Sp. Pl.* Ed. 2, vol. ii. p. 1278. *Jacq. Hort. Vind.* t. 162.

H. gigas, *Michx. Fl. Bor. Am.* vol. ii. p. 141.

H. fol. lanceolat. sessil., *Gronov. Fl. Virgin.* p. 104.

Chrysanthemum virginicum elatius, &c. *Pluk. Phytog.* pars. iii. t. 159, f. 5, *et Almagest.* p. 99, t. 159, f. 5.

C. virginicum altiss., &c. *Morison Plant. Hist.* vol. iii. p. 24, t. 7, f. 66, 67.

Helianthus giganteus is a very old inhabitant of such English gardens as were devoted to the cultivation of exotic plants. The earliest mention of it that I have found is in Plukenett's "Phytographia," published in 1692; and it is included by Morison in his "Plantarum Historia Universalis Oxoniensis," published in 1699, but who does not state whether it was then cultivated in England. Gronovius, in his account of the plants collected by J. Clayton, who went to Virginia in 1705, gives a terse diagnosis of it; and its introduction was possibly due to Clayton, for Aiton states that it was cultivated in 1714 by the Duchess of Beaufort. In North America it has a very wide range, from the St. Lawrence to Louisiana, and in the West from the Red River and Saskatchewan southward. It so strongly resembles *H. tuberosus* (Tab. 7545), having similar roots, that a low northern form, the "Indian Potato of the Asiniboine tribe" has been confounded with

that plant, which differs in the broader leaves, the lower opposite, the longer petioles, and the loose invol. bracts.

H. giganteus has been cultivated in the Royal Gardens probably from their first establishment, but the specimen here figured was from the rich Herbaceous collection of A. B. Freeman Mitford, C.B., of Batsford Park, Moreton-in-Marsh, Worcestershire. It flowers in September.

Descr.—*Rootstock* creeping, with fusiform cylindric roots. *Stem* three to ten feet high, strict, erect, red-brown, sub-corymbosely branched, and more or less hispidly hairy above, more glabrous beneath. *Leaves* three to five inches long, alternate, subsessile, lanceolate or oblong-lanceolate, acuminate, serrate or nearly entire, penni-nerved, base cuneate, pale green, sparsely hispidulous above, more so beneath. *Heads* two and a half to three and a half inches broad. *Involucral bracts* linear-lanceolate, finely acuminate, loosely imbricate, dark green, hispid. *Bracteoles* of receptacle with entire acute pubescent tips. *Flowers of the ray* fifteen to twenty; ligule about an inch long, elliptic-lanceolate, rather pale yellow, tips acute, entire. *Disk flowers* narrow, puberulous, rather darker yellow than the ray.—*J. D. H.*

Fig. 1, Involucral bracts; 2, achene and base of ray-flower; 3, scale of receptacle; 4, flower of disk; 5, stamens; 6, arms of style:—*all enlarged*: 7, *reduced* view of whole plant.

W. S. del. J.N. Fitch.

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Tab. 7556.

VERONICA Balfouriana.

Native of New Zealand.

Nat. Ord. Scrophularineæ.—Tribe Digitaleæ.

Genus Veronica, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 964.)

Veronica (Hebe) *Balfouriana*; frutex erectus, ramosus, flexuosus, fere glaberrimus ramulis, fusco-purpureis, foliis laxe approximatis uniformibus ad ½ poll. longis subsessilibus patentibus et decurvis elliptico-ovatis integerrimis obtusiusculis acut. coriaceis lete viridibus rubro-fusco marginatis, racemis axillaribus pedunculatis multi-densi-floris, bracteis pedicellos subæquantibus oblongis obtusis calycibusque puberulis, sepalis oblongo-lanceolatis acutis tubum corollæ subæquantibus, corollæ ⅓ poll. diam. violaceæ tubo brevi, lobis rotundatis antico minore, filamentis lobos corollæ subæquantibus, antheris fusco-rubris loculis basi rotundatis, capsula parva late ellipsoidea sepalis longiore.

Under *Veronica diosmæfolia* (Tab. 7444) I have alluded to having drawings of at least six species or varieties of *Veronicas* raised from New Zealand seeds at the Royal Botanical Gardens of Edinburgh, which I was unable to identify with described congeners. These and other drawings I sent to my friend, Mr. Thomas Kirk, F.L.S., Wellington, N.Z., who is engaged upon a Flora of New Zealand, in the hopes that he might aid me in determining them. This he did in the case of some, but for others, including that here figured, he could give me no name. Of it he says, "Apparently new, the acuminate calyx-segments, and the large corolla, with equal broad segments, are striking characters. Although showing affinity with *V. Traversii*, it can hardly be a form of that species."

Comparing specimens of *V. Balfouriana* and *Traversii* as they grew alongside one another in my garden near Sunningdale, I find that *Balfouriana* differs in habit, not tending to form a rounded bush, in the smaller, paler green leaves, with red-brown margins, the longer racemes with very much larger violet (not white) flowers, in the long acuminate sepals, which are nearly as long as the short corolla tube and as the capsule, and in the obtuse bases of the cells of the shorter broader red-brown anthers. I regret to add that *V. Traversii* is much the hardier of

the two, it having (with some damage, however) resisted the effects of the coldest winters, to one of which *V. Balfouriana* succumbed. The figure is from a plant that flowered on a rockery in my garden in June, 1895. It was received in the previous year from the Royal Botanic Garden of Edinburgh. In the Royal Gardens, Kew, it has proved quite hardy.

Descr.—An erect, glabrous shrub, three feet high, with dark brown bark and suberect flexuous purpli brown or reddish branches. *Leaves* subsessile, one half to three-fourths of an inch long, in loosely approximate pairs, spreading and decurved, elliptic-ovate, obtuse or subacute, quite entire, coriaceous, bright pale green and shining above, with narrow brown margins. *Racemes* opposite, axillary from the base of the last year's shoots, two to three inches long, erecto-patent, very many-fld., peduncle stout; flowers crowded; pedicels about as long as the calyx, puberulous; bracts ovate, acute or obtuse, about as long as the pedicel. *Sepals* about one-sixth of an inch long, obtuse or acute, ciliolate. *Corolla* pale violet-blue, half an inch in diameter, tube as long as the sepals; lobes rounded, three upper subequal, the lower narrower. *Stamens* as long as the corolla lobes or shorter; anthers red-brown, bases of cells rounded. *Capsule* ellipsoid, about one-third longer than the sepals or less.—*J. D. H.*

Fig. 1, Flower, pedicel and bract; 2, pedicel, bract, calyx and style; 3 and 4, anthers; 5, ovary and disk:—*All enlarged.*

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Tab. 7557.

CIRRHOPETALUM ROBUSTUM.

Native of New Guinea.

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Cirrhopetalum, *Lindl.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 504.)

Cirrhopetalum (Racemosæ) *robustum*; grande, pseudobulbis cæspitosis 3-pollicaribus ovoideis alte costatis, folio 8-10-pollicari oblanceolato crasse carnoso, pedunculo pseudobulbo breviore crasso ascendente, racemo breve dense-multi-floro, bracteis $\frac{2}{3}$-poll longis oblongis acuminatis reflexis pallide viridibus, pedicellis robustis, floribus 3 poll. longis, sepalis flavo-viridibus basin versus pallide rufescentibus dorsali pollicari oblongo cuspidato, lateralibus 2-pollicaribus lineari-oblongis obtusis ad apicem fere cohærentibus, petalis oblongis cuspidatis, labello sanguineo glaberrimo, columna aurea 2-cornuta.

C. robustum, *Rolfe in Orchid. Rev.* vol. i. (1893), p. 175. *Masters in Gard. Chron.* 1895, vol. i. p. 771.

C. graveolens, *Bailey, Contrib. Queensl. Flor. Bullet.* xiii. (1896) p. 33. *Orchid. Rev.* vol. iv. (1896) p. 308. *Kew Bullet.* 1896, App. ii. p. 48.

Cirrhopetalum robustum, though by far the largest, and a truly massive species, departs in no respects from the genus in any character. It belongs to the group in which the inflorescence is truly racemose, and its nearest ally known to me is the comparatively dwarf *C. refractum*, Zoll., figured in King's "Annals of the Calcutta Bot. Gardens," vol. v. t. 28, and vol. viii. t. 119, a native of the Himalaya, Tenasserim Mts., and Java. Besides the enormous difference in size, *C. refractum* is distinguished, amongst other characters, by the membranous leaves, lanceolate and ciliate dorsal sepal and petals, and the long, slender, decurved spurs of the column.

C. robustum was discovered in British New Guinea by Sir W. Macgregor, K.C.M.G., the Governor and indefatigable explorer of that great island; and plants from thence were brought to the late Colonel Trevor Clarke, of Walton Place, Daventry, by his nephew, Captain Clarke. These flowered in March, 1893, and were described by Mr. Rolfe under the name of *C. robustum*. In 1896 the same plant was described by Mr. Bailey, Government

Botanist of Queensland, as *C. graveolens*, also from Sir W. MacGregor's specimens. Mr. Bailey observed that flies are attracted by the strong, heavy scent of the flowers, and, being entrapped between the lip and column, perish there. The specimen here represented was presented to the Royal Gardens, Kew, by Col. Clarke, in 1893. It flowered in a tropical house in March, 1897, producing five racemes.

Descr.—*Rootstock* stout, woody. *Pseudobulbs* clustered, two to three inches long, ovoid, compressed, green, with two keels and four strong, dorsally rounded ribs, quite smooth. *Leaf* solitary, eight to twelve inches long, by three to three and a half broad, oblanceolate, acuminate, narrowed into a very short, stout, cylindric petiole, thickly coriaceous, bright green and nerveless above; beneath paler, mottled with minute darker spots, bearing a stout, rounded midrib, and several pairs of slender nerves. *Peduncle* ascending from the base of the pseudobulb, three inches long, as thick as a goose-quill green, with one or two short ribbed green sheaths. *Racemes* an inch long, many-fld.; rachis stout; bracts one half to three-fourths of an inch long, oblong, acute, membranous, spreading and reflexed; pedicels stout, with the ovary one to one and a half inch long. *Flowers* three inches long from the tip of the suberect dorsal sepal to those of the lateral. *Sepals* yellow green, suffused or streaked with rose towards the base; dorsal oblong, cuspidate, concave, seven-nerved; lateral two inches long, linear-oblong, coherent beyond their divergent bases, tips free, rounded. *Petals* oblong, cuspidate, yellow, suffused with pale rose. *Lip* nearly half an inch long, ovate-oblong, obtuse, fleshy, recurved, blood-red, smooth, with a central furrow, and two keels towards the pubescent base. *Column* short, stout, yellow, with short, stout, recurved arms.—*J. D. H.*

Fig. 1, Petal; 2, lip and column; 3, anther; 4, pollinia:—*All enlarged.*

M. S del. J. N Fitch lith.

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Tab. 7558.

AGAVE Bouchei.

Native of Mexico.

Nat. Ord. Amaryllideæ.—Tribe Agaveæ.

Genus Agave, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 733.)

Agave (Littæa) *Bouchei*; caudice brevi cylindrico polycarpico, foliis 30–40 dense rosulatis oblongo-lanceolatis facie concavis adultis utrinque viridibus junioribus leviter glaucescentibus spinâ brevi vix pungente terminatis, spinulis marginalibus crebris minutis deltoideis castaneis, pedunculo valido brevi, floribus geminis in spicam densam aggregatis, bracteis linearibus elongatis, bracteolis parvis deltoideis, ovario oblongo, perianthii tubo brevi late infundibulari, lobis oblongis, filamentis lobis quadruplo longioribus, antheris linearibus, fructu parvo oblongo.

A. Bouchei, *Jacobi, Monogr. Agave.* p. 120. *Baker in Gard. Chron.* 1877, p. 717; *Handb. Amaryllid.* p. 191.

This Agave is one of the few species that have a firm, woody trunk, and do not die after flowering. It belongs to the group called *Carnoso-coriacea*, in which the leaves are less rigid and more fleshy than in the best-known species of the genus, such as *A. americana* and *rigida*, and which are much less frequent in cultivation. The present plant was introduced into the Berlin Botanic Garden in 1861, and after it had flowered in 1864 was named by General Jacobi in compliment to Inspector Bouché. It has been in the Royal Garden at Kew for at least twenty years, but has never flowered till the summer of 1896.

Descr.—*Peduncle* stout, woody, polycarpic, nearly as long as the leaves, bearing in the Kew plant, two rosettes of leaves crowded at its apex. *Leaves* thirty or forty in a dense rosette, oblong-lanceolate, rather fleshy in texture, a foot and a half or two feet long, three or four inches broad at the middle, concave all down the face, a sixth of an inch thick in the centre, green on both surfaces when mature, slightly glaucous when young; end spine short and weak; marginal teeth very small, crowded, deltoid, red-brown. *Peduncle* short and stout. *Spike* dense, two feet long in the Kew plant: flowers in pairs, subtended by a long bract, and a pair of small bracteoles. *Perianth*

greenish-yellow, an inch and a half long, including the ovary; tube short; lobes of the limb oblong. *Stamens* inserted at the throat of the perianth-tube, two inches long; anthers linear, half an inch long. *Style* finally overtopping the anthers. *Capsule* small, oblong.—*J. G. Baker.*

Fig. 1, Back view of anther; 2, front view of anther; 3, apex of style, *all enlarged*; 4, whole plant, *much reduced.*

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Tab. 7559.

PRIMULA sinensis.

Native of China.

Nat. Ord. Primulaceæ.—Tribe Primuleæ.

Genus Primula, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 631.)

Primula sinensis, *Sabine ex Lindl. Coll. Bot.* t. 7. *Hook. Exot. Flora*, t. 105. *Bot. Mag* t. 2564. *Hance in Journ. Bot. N. S.* vol. ix. (1880) p. 262. *Gard. Chron.* 1889, vol. i. p. 115, fig. 16; 1890, vol. ii. p. 564, fig. 119; 1891, vol. i. p. 209; 1892, vol. i. p. 13, fig. 2. *Hemsl. & Forbes in Journ. Linn. Soc.* vol. xxvi. (1889) p. 42. *Sutton in Journ. Hort. Soc.* vol. xiii. (1891) p. 99.

P. prænitens, *Ker-Gawl. in Bot. Reg.* t. 539 (1821).

P. setulosa, *Kicks f. in Mem. Soc. Linn. Par.* vol. iv. (1826) p. 31, t. 3.

P. semperflorens, *Loisel ex Steud. Nomencl. Ed.* 2, vol. ii p. 296.

P. mandarina, *Hoffm. in Otto & Dietr. Allg. Gartenz.* vol. iii. (1835) p. 194, t. 1.

Oscaria chinensis, *Lilja, in Lindbl. Bot. Notiser.* 1839, p. 39, *ex Linnæa*, vol. xxii. (1849) p. 259.

The recent flowering of specimens of *Primula sinensis* raised from freshly imported seeds taken from indigenous plants, and the receipt of herbarium specimens, affords the opportunity of recalling the history of this familiar and beautiful green-house ornament, which, though so long known under cultivation, has only within comparatively few years been collected in a native state. This has been effected first, according to Mr. Sutton, in 1879, by a Mr. Walters, and more recently by two travellers who have, whilst working independently, done more towards making known the botanical riches of China than have all previous collectors put together; they are the French missionary Abbé Delavay, and H.B.M. Consul Henry, both of whom found *Primula sinensis* in limestone rocks fully exposed to the sun, at Ichang on the River Yangtze Kiang, a thousand miles above its mouth. There Mr. Henry describes it as growing in extremely dry rocks, where there is practically neither soil nor moisture, flowering in December and January, and known as the Rock or Winter Primrose. Mr. Walters, on the other land, describes it as

growing in shade. All the specimens collected by the Abbé Delavay and Mr. Henry are small, some quite dwarf, with short, woody rootstocks; all have glandular (slightly sweet-scented) leaves, peduncles, and calyces, and very small flowers, with simply obcordate corolla-lobes.

According to a statement in the *Gardening World*, December 17th, 1887, quoted by Mr. Sutton in his paper, the Chinese Primrose was first made known by a drawing sent in 1819 to the Horticultural Society of London by John Reeves, Esq., F.R.S., when Inspector of Teas for the Honourable East India Company at Macao. This led to the Society's requesting Mr. Reeves to procure living plants or seeds, which he did. Seeds of two varieties were sent, both from Chinese gardens, one of which produced small flowers, and simply obcordate corolla-lobes; in the other these were wavy and crenate. At about the same time a living plant was brought home by a Captain Rawes, who gave it to Thomas Palmer, Esq., of Bromley, Kent. This flowered in 1821, and was figured as *Primula pranitens* by Mr. Ker-Gawler, in the *Botanical Register* of that year; it has crenate corolla-lobes. In the same year Lindley published a figure of the same plant in his "Collectanea Botanica" as *P. sinensis*, Sabine. The form, with entire obcordate corolla-lobes, was first figured in 1823, in Hooker's "Exotic Flora," from a specimen that flowered in the Edinburgh Botanical Gardens, obtained from the Horticultural Society of London. The same form was again figured in 1825, in this Magazine, with the observation that it was introduced by T. C. Palmer, Esq.

Turning now to the specimen here figured, I am indebted for its history to Dr. Masters, who informs me that it is one of some seedlings which he saw in 1891, at Lady Hutt's, Appleby Towers, Ryde, and which he at once recognized as being of the wild *Primula sinensis*. On inquiry he was told that the seedlings were raised from seed sent, it was believed, from Ichang. Having been given some of the seedlings, he passed them on to his friend Mr. Edmund Hyde, of Ealing, who was in 1892 the first to flower the wild plant. In the *Gardener's Chronicle* for that year Dr. Masters has given an excellent figure of this as "The wild form of *Primula sinensis* after one year's cultivation." Being a first year's plant, no stem is represented; this,

however, is conspicuous in the specimen here figured, which was kindly sent to the Royal Gardens by Mr. Hyde in December, 1896, and is hence a plant of five years' growth. The most remarkable feature of both figures is the startling change from the miserable starved condition of the wild state, as shown by Mr. Henry's specimens, to the great size and robust habit of the firstborn offspring; that is supposing that the plants raised at Lady Hutt's were from the seeds of such dwarfs, for it must not be forgotten that Mr. Walters describes the wild Chinese Primrose as he found it to be growing in shade, and hence probably differing much in size from Mr. Henry's, which grew on sun-scorched rocks.

Comparing the figures in the *Gardener's Chronicle* and that given here with any of the numerous ones of *Primula sinensis* that have appeared since 1822, the difference between them is very manifest, in robustness of habit of the former, compactness of inflorescence, and other characters difficult of putting into words, but all suggestive of a feral form.

For information upon the garden varieties of this plant, their cultivation and propagation, together with other interesting matter, I must refer to Mr. Sutton's valuable paper in the journal of the Horticultural Society cited above.—*J. D. H.*

Fig. 1, Calyx; 2. bisected corolla-tube laid open, with stamens and ovary; 3, stamen:—*All enlarged.*

M. S. del, J N. Fitch lith

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Tab. 7560.

CALATHEA rufibarba.

Native of Brazil?

Nat. Ord. Scitamineæ.—Tribe Maranteæ.

Genus Calathea, *G. F. W. Mey.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 653.)

Calathea (Eucalathea) *rufibarba*; acaulis, tota floribus exceptis pilis longis flaccidis pallide brunneis induta, foliis distichis longe petiolatis lineari-lanceolatis acuminatis marginibus undulatis supra laete viridibus subtus pallidioribus violaceo tinctis, scapo brevi robusto petiolo multo breviore et robustiore, spica breviter oblonga, floribus congestis longe exsertis aureis, bracteis spica brevioribus ovatis acutis spiraliter convolutis hirsutis, sepalis angustis acuminatis pilosis, corollæ tubo sepalis longiore fere unciali cylindraceo piloso, lobis subæquilongis lineari-oblongis obtusis dorsali ovato-oblongo, labello lobo dorsali subsimili apice 2-lobulato concavo lateribus incurvis, staminodio galeato, galea basi calcare subulato-lanceolato horizontali instructa, ovario glabro.

C. rufibarba, *Fenzl in Gartenfl.* vol. xxviii. (1879) p. 294. *Petersen in Mart. Fl. Bras.* vol. iii. pars III p. 91.

A very well marked member of a large tropical genus, containing nearly seventy known species, all, except a few African ones, natives of America, especially of Brazil. Of those figured in this work that which is most nearly allied to *C. rufibarba* is *C. villosa*, Lindl. (t. 4973), which differs a good deal in habit, having very large oblong leaves, a long scape, and flowers nearly two inches in diameter, but in which the hooded staminode bears a similar spur.

C. rufibarba was established on specimens cultivated in the Imperial Garden of Vienna, by Professor Fenzl, and is supposed to be a native of Brazil. Specimens of it flowered by Messrs. Sander & Co. in 1894, are preserved in the Kew Herbarium, of which the leaves were purple beneath. The Royal Gardens, Kew, are indebted to the Imperial Gardens of St. Petersburg for the plant here figured, which was received in 1891. It forms tufts of leaves as grown in a pan in a stove, and flowers freely every few months.

Descr.—Stemless, clothed everywhere but on the flowers,

with long, lax, spreading rufous-brown hairs. *Leaves* distichous, long-petioled, five to seven inches long, linear-oblong, or -lanceolate, acuminate, margin strongly waved, base rounded or cuneate, thin, bright green above, beneath pale blueish green with a violet blush, and a stout midrib; petiole nearly as long as the blade, red-brown, strict, erect. *Scape* two inches long, very stout. *Spike* two to three inches long, and nearly as broad, dense fld.; bracts (the lowest one inch long), hirsute, ovate, spirally convolute, much shorter than the inflorescence. *Flowers* golden-yellow, exserted far beyond the bracts. *Sepals* three, very slender, acuminate, pilose, shorter than the corolla-tube, which is terete, hairy. *Corolla* nearly an inch across the limb; lobes linear-oblong, obtuse. *Lobes* of the androecium much broader than the petals, upper and lower (or lip) subequal, the latter concave, 2-fid at the tip, with involute margins; appendage of the staminode helmet-shaped, with a horizontal subulate spur at its base. —*J. D. H.*

Fig. 1, Flower; 2, tip of sepal seen from within; 3 and 4, staminode; 5, androecium:—*All enlarged.*

M.S.de. J.N.Fitch lith

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Tab. 7561.

PTERISANTHES polita.

Native of the Malayan Peninsula and Islands.

Nat. Ord. Ampelideæ.

Genus Pterisanthes, *Blume.*; (*Benth. & Hook.f. Gen. Plant.* vol. i. p. 387.)

Pterisanthes *polita*; frutex scandens, gracillimus, fere glaberrimus, foliis late ovatis ovato-cordatis v. elliptico-oblongis acutis basi subcordatis remote dentatis chartaceis nitidis, cirrhis bifidis crure altera simplice altera florifera, receptaculo 4–5-pollicari longe stipitato lineari-oblongo plano basi apiceque inæquilaterali apice caudato sublanuginoso luride fusco-rubro utrinque florifero, costa valida, floribus aliis disco receptaculi immersis perfectis, aliis marginalibus longe pedicellatis foemineis v. sterilibus, calycis brevissimi obscure 4-lobi tubo bracteis rudimentariis annulato, baccis pisiformibus 2–3-locularibus, pericarpio tenui, loculis 1–2 spermis "albumine fissuris 2 subtrilobato."

P. polita, *M. Lawson in Fl. Brit. Ind.* vol. i. p. 663. *Planch. in A. DC. Monogr. Phanerog.* vol. v. p. 416.

Vitis polita, *Miq. Ann. Mus. Lugd. Bat.* vol. i. p. 95.

Pterisanthes is one of the most singular of plants in respect of its inflorescence, which consists of the transformation of a branch of a tendril into an elongated broad or narrow disk, bearing the flowers sessile on one of its faces, and with sometimes others pedicelled on its margins. Extreme as is this modification of the inflorescence of *Vitis*, there are species of the latter genus with spicate flowers, and the flowers sunk in the rachis of the spike, that show a marked transition to *Pterisanthes*, and perhaps justify Miquel in considering the two genera as one. Four species of *Pterisanthes* have been described, all Malayan (of which one, the present, is also Burmese), most of which have compound leaves.

On making an anatomical study of the flower of *Pterisanthes polita*, Dr. Stapf recognized the presence of rudimentary bracts on the calyx, to which Griffith, in describing another species, *P. cissoides* (*Embamma caudigerum*, Notul. iv. 694; Ic. Pl. Asiat. t. 695), alludes as "a roundish brownish cicatrix" of the nature of which he is uncertain. As bracts or bracteoles are present in species

of *Vitis*, Dr. Stapf's explanation is no doubt the correct one.

Pterisanthes polita is a native of the Malayan Peninsula from Moulmein, in Burma, where it was found by Lobb, to Singapore; and also of Sumatra and Borneo. The Royal Gardens, Kew, received plants of it from those of Singapore in 1894, which flowered in a stove in November, 1896.

Descr.—A tall, slender climber, glabrous, except in the sparsely woolly surface of the receptacle. *Leaves* simple, four to six inches long, broadly ovate, or ovate-cordate, acuminate, shortly, distantly toothed, chartaceous, bright-green and shining above, pale beneath; nerves six to eight pairs, arching; basal sinus closed; petiole one to two inches long. *Receptacle* occupying the middle of one branch of a bifid tendril, four to five inches long, by one to one and a half broad, dark red-brown, very unequal-sided at both ends, tip with a capillary tail; rarely the receptacle is lobed or interrupted on one side; midrib stout; peduncle (naked portion of cirrhus) three to four inches long. *Flowers* about an eighth of an inch in diam., some bisexual, sessile, scattered over and sunk in both surfaces of the receptacle; others female or neuter, marginal, on stout pedicels about half an inch long. *Calyx* tube very short, limb obscurely four-lobed. *Petals* four, rounded. *Disk* broad, fleshy. *Stamens* 4. *Style* very short, conical. *Berry* pisiform.—*J. D. H.*

Fig. 1, Portion of receptacle with sessile and pedicelled flowers; 2, pedicelled female flower; 3, vertical section of the same, showing the bracts, calyx, and petals; 4, larger marginal female flower with the calyx and petals removed; 5, vertical section of the same; 6 and 7, stamens from sessile flowers; 8, vertical section of ovary of sessile flower:—*All enlarged.*

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Tab. 7562.

MAMMEA americana.

Native of the West Indies.

Nat. Ord. Guttiferæ.—Tribe Calophylleæ.

Genus Mammea, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 176.)

Mammea *americana*; arbor dumosa, ramosissma, foliis crasse petiolatis ovatis obovatis v. obovato-oblongis obtusis basi rotundatis cuneatisve tenuiter coriaceis saturate viridibus, nervis numerosis patentibus nervulis reticulatis prominulis, floribus solitariis 2–3-nisve breviter pedicellatis $1\frac{1}{2}$ poll. diam. 4–6-meris suaviter odoratis, sepalis obovato-oblongis concavis pallide viridibus, petalis paullo longioribus late obovatis demum recurvis albis, staminibus perplurimis, filamentis filiformibus, antheris linearibus connectivo apiculatis, ovario lagenæformi in stylum breve crassum angustato, stigmate bilabiato, labiis crassis rotundatis recurvis, loculis minutis, drupa magna globosa 1–4-sperma cortice fusco tenui, carne fibrosa flavida, seminibus magnis compressis, testa crassa fibrosa, cotyledonibus magnis agglutinatis.

M. americana, *Linn. Sp. Pl.* p. 512. *Jacq. Stirp. Am. Hist.* p. 268, t. 181, fig. 82; *Select. Stirp. Ic. Pict.* vol. i. t. 248. *Vahl, Eclog.* vol. ii. p. 40. *Willd. Sp. Pl.* vol. ii. pars. II. p. 1157. *Ait. Hort. Kew*, Ed. 2, vol. iii. p. 297. *Lamk. Encycl. Suppl.* vol. iii. p. 582; *Ill.* t. 458. *Lunan, Hort. Jamaic.* vol. i. p. 431. *Descourl. Fl. Med. Antill.* vol. i. p. 561. *DC. Prodr.* vol. i. p. 561. *Tussac, Fl. Antill.* vol. iii. t. 7. *Maycock, Fl. Barbad.* p. 227. *Macfad. Fl. Jamaic.* vol. i. p. 135. *Planch. & Trian. Mem. Guttif.* pp. 12, 212. *Trian. & Planch. Fl. Nov. Granad.* p. 285. *Griseb. Fl. Brit. W. Ind.* p. 108. *Engler in Mart. Fl. Bras.* vol. xii. pars. I. p. 395, t. 79. *A.DC. Origine Pl. Cult.* p. 150.

Mamay, *Dalechamps, Hist. Gen. Pl.* 1536.

Arb. Ind. Mamei dict., *Bauh. Pinax*, p. 417.

Mam. *Laest. Hist. Nouv. Monde*, p. 356.

Mamay arb., &c., *Bauh. Hist. Pl. Univ.* vol. i. p. 172.

Malus persica maxima, &c., *Sloane, Hist. Jamaic.* vol. ii. p. 123, t. 217, p. 3.

Mammei, magn. fruct., &c., *Plum. Nov. Pl. Gen.* p. 44; *Icon.* t. 170.

The Mammee tree, *Hughes, Hist. Barbad.* p. 133.

Mamme fol. oval, &c., *P. Browne, Hist. Jamaic.* p. 249.

Abricoteiro de Brasil, Apricotier d'Amérique.

The *Mammee*, a tree cultivated for its edible fruit in the tropics of America, is undoubtedly indigenous in Cuba, Jamaica, and other of the West Indian Islands; in Jamaica indeed it is said to be one of the commonest trees. I find no evidence of its being a native of the continent of South

America, and Ernst. (in Seeman's *Journ. Bot.* 1867, p. 273) says that it is not indigenous in Caraccas. It has been introduced into Western Africa, and I have eaten the fruit in the Cape de Verd Islands; but curiously enough I can find no record of its having been ever cultivated in India, into which country the Portuguese must have endeavoured to introduce so conspicuous a plant, and one so easily grown from seed; nor is it included in Watt's "Dictionary of the Economic Products of India."

The Mammee apple varies in size from that of a small orange to almost a child's head. There is an excellent painting of its foliage and fruit in the North Gallery at Kew (n. 64). A rough, leathery, bitter rhind, and a thinner interior one enclose a firm, somewhat spongy white pulp, soon turning yellowish, of a hard, fibrous consistence, sweetish taste, and slightly aromatic flavour. This surrounds one to four large brown, oblong, rather compressed, rugose nuts, with a hard, fibrous coat, and oily, fleshy cotyledons. The seeds vary greatly in size. Opinions as to the gratefulness of the flesh of the Mammee apple differ much. Sloane writes of it, as "one of the most pleasant and grateful to be met with in Jamaica," adding, that swine get extremely fat on it. No other verdict on it that I have met with is so flattering, and the fact that it is not admitted amongst the table fruits of the tropics is proof of disfavour. My own opinion of that which I ate was, that it was comparable to a good turnip, flavoured as above, i.e. sweetish, and faintly aromatic. By the Portuguese and earlier British residents in the West Indies, the fruit was cut in slices, and eaten with wine and sugar, and also candied. A liqueur is obtained by distillation from the flowers infused in spirits of wine, called Eau de Creole, and Crême des Creoles. The bark yields an acrid, resinous gum, of great value for the extirpation of chigoes. The cotyledons yield a hair oil. The wood is poor; but the tree, with its brilliant green leaves and deliciously scented flower, is so handsome an object that de Tussac eulogizes it as "la Sirène végétale."

The earliest notice I find of the Mammee apple is in Dalechamp's "Historia generum Plantarum," published in 1586; but in this, as in other old authors, it is perhaps

confounded with the Marmalade plum of the West Indies, *Lucuma mammosa*, Gærtn. The first good account of it is in Sloane's "History of Jamaica." It was introduced, according to Aiton's "Hortus Kewensis," into England before 1737, and it has long been in cultivation at the Royal Gardens, Kew, where there is, in the Economic House, a tree of it ten feet high. This flowered (but did not form fruit) in August, 1896, and from it the accompanying figure of the foliage and flower is taken; that of the fruit is from a specimen preserved in fluid in the Economic Museum (No. 2) of the Royal Gardens, presented by C. D. Sturge, Esq., of Montserrat. The seed figured is an abnormally large one, such as occur when one only is developed in the fruit.

Descr.—A large, umbrageous tree, sixty to seventy feet high, with a stout trunk, and dense coma; branchlets stout, covered with a dark brown bark. *Leaves* terminating the stout branchlets, three to five inches long, oblong, obovate, or obovate-oblong, obtuse, variable in breadth, thinly coriaceous, bright green and shining above, paler beneath; base rounded or cuneate; nerves very numerous, spreading, with close set cross nervules; petiole about half an inch long, stout, channelled above. *Flowers* solitary, or 2–4-nate on the wood of the branches at the axils of fallen leaves, about one and a half inches in diameter, sweet-smelling; pedicels about half an inch long, stout, green, ebracteate. *Sepals* four to six, orbicular-obovate, obtuse, concave, very pale green, and obscurely spotted. *Petals* a fourth or less longer than the sepals, broadly obovate, recurved, white. *Stamens* very numerous, in many series; filaments filiform; anthers linear, apiculate. *Ovary* broadly flaggon-shaped, narrowed into a very stout style, with two orbicular, spreading, recurved, fleshy stigmas. *Fruit* from the size of an orange to a child's head, spherical, or nearly so; rhind thick, flesh yellow, pulpy, stringy around the large seeds.—*J. D. H.*

Fig. 1 and 2, Stamens; 3, ovary; 4, longit. section of do.; 5, transverse section of fruit; 6, seed; 7, ditto, with testa removed; 8, transverse section of embryo:—All but figs. 5, 6, and 7 enlarged.

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Tab. 7563.

TAINIA PENANGIANA.

Native of Penang.

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Tainia, *Blume*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 515.)

Tainia *penangiana*; pseudobulbis crassis ovoideis vaginatis, vagina in tubum elongatum petiolum amplectente producta, folio lanceolato longe petiolato, scapo e basi pseudobulbi erecto petiolum longe superante gracili basi vaginis brevibus late ovatis imbricatis tecto, racemo laxifloro, bracteis lanceolatis pedicellis æquilongis, floribus 2 poll. expans., sepalis petalisque consimilibus lanceolatis acuminatis flavidis rubro striatis, labelli albi lobis lateralibus obtusis columnam amplectantibus, intermedio parvo orbiculari v. rhombeo cuspidato, disco lamellis 3 ornato, **calcare sacciforme lobulato, columna alata.**

T. penangiana, *Hook. f. Fl. Brit. Ind.* vol. v. p. 820; *in Hook. Ic. Pl.* t. 2089.

The genus *Tainia* was founded by Blume on a Malayan plant, *T. speciosa*, which was for many years the only recognized species. To this three, also Malayan, were added by Reichenbach, and one by Teijsmann and Beinnendyke. These five are all that were known at the date of publication of the Index Kewensis; since which upwards of a dozen species have been recognized, chiefly British Indian, and it may be confidently anticipated that there are not a few yet to be discovered. One only has hitherto been published in this magazine, namely *T. viridifusca*, Benth. (*Calanthe viridifusca*, Hook., t. 4669.)

T. penangiana was first described in the "Flora of British India" from very imperfect herbarium specimens, in which no pseudobulb was present at the base of the petiole, and the midlobe of the lip had crisped margins, no doubt from contraction in drying. The plant figured was received at the Royal Gardens, Kew, from Penang, where it was discovered growing on damp rocks by Mr. C. Curtis, F.L.S., Assistant Superintendent, Gardens and Forest Department. It flowers annually in March, in a warm house.

Descr.—*Pseudobulbs* clustered, two inches long, ovoidly flagon-shaped, clothed with brown, scarious sheaths, the

inner of which is prolonged into a long tube sheathing the petiole ; old pseudobulbs one and a half inches in diameter, red brown, furrowed. *Leaf* a foot long, elliptic-lanceolate, acuminate, plicate, many-nerved, narrowed into a slender, green petiole, as long as the blade, or shorter. *Peduncle* nearly twice as long as the petiole, arising from the base of the pseudobulb, green, clothed at the base with closely imbricating, ovate, acute, brown sheaths, half an inch long, and bearing upwards a few distant appressed, brown, obtuse sheaths. *Raceme* erect, few- and lax-fld. ; bracts lanceolate, brown, about equalling the pedicel, which, with the ovary, is about half an inch long. *Perianth* about two inches broad across the sepals. *Sepals* and *petals* spreading, subequal, lanceolate, acuminate, pale yellow, with five to seven slender, red nerves. *Lip* nearly white ; side lobes elongate, obtuse, embracing the column ; midlobe small, rhomboidly orbicular, abruptly acuminate ; disk with three lamellæ that are prolonged on to the midlobe, and there become much deeper ; spur a lobulate sac. *Column* white, winged. *Anther* subquadrate, tip truncate ; pollinia eight, in two superposed pairs of four each.—*J. D. H.*

Fig. 1, Lip ; 2, column, spur and lip of ovary ; 3, anther ; 4, pollinia :—*All enlarged.*

M S. del, J N Fitch lith

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Tab. 7564.

CYNORCHIS grandiflora.

Native of Madagascar.

Nat. Ord. Orchideæ.—Tribe Ophrydeæ.

Genus Cynorchis, *Thou.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 628.)

Cynorchis *grandiflorus*; caule sesquipedali valido 2-pluri-floro, foliis radicalibus paucis pedalibus elongato lineari-lanceolatis a medio ad apicem sensim angustatis supra glauco-viridibus subtus pallidioribus carinatis utrinque sed subtus precipue hic illic sanguineo striatis, bracteis 3-pollicaribus cylindraceis subinflatis acuminatis striolatis, ovario cum pedicello 4-pollicari rufo maculato, floribus fere 2 poll. expans., sepalis oblongis obtusis dorso viridibus sanguineo maculatis, petalis sepalis paullo minoribus falcato-oblongis obtusis albis, labelli ampli purpurei marginibus basi columnæ adnatis, lobis lateralibus late cuneiformibus basi unidentatis, intermedio longiore in segmenta 2 linearia obtusa divaricata fisso, sinu acuto, calcare crasso recto labello duplo longiore infra medium paullo inflato, antherarum tubulis rectis, columna dorso rostelloque retuso puberulis.

Cynosorchis grandiflora, *Ridley in Journ. Linn. Soc.* vol. xx. (1884) p. 332, et vol. xxi. p. 514 (Cynorchis).

Though no doubt a congener of *Cynorchis purpurascens*, recently figured in this work (t. 7551), *C. grandiflora* differs from that plant remarkably, not only in habit, but in the margins of the base of the lip being connate with the column, and forming with it a tube leading into the spur. Until the other species of the genus (of which there are a dozen described, and some undescribed in the Kew Herbarium) are critically examined, it is impossible to say what value should be given to this latter character.

Cynorchis grandiflora was first described by Mr. Ridley, F.L.S., from specimens in the Britsh Museum, collected in Madagascar, at Ankafana, by Mr. Deans Cowan. It has since been found on damp rocks in various places in the central part of the island, by Dr. J. T. Fox, the Rev. R. Baron and Mr. Scott Elliott. Mr. Ridley describes two varieties as follows:—Var. α, *purpurea*, inodorous, lip purple, spotted at the base; β, *albata*, odoriferous, lip white, base purple. The nearest ally is *C. uniflora*, Lindl. (which often bears several flowers) the bract of which is very much smaller. The plant here figured was obtained

by the Royal Gardens, Kew, from Messrs. Lewis & Co., Southgate, in 1893. It flowers annually in the Orchid House in July, where it is treated with tropical Habenarias.

Descr.—*Stem* up to two feet, attaining a thickness of a swan's quill, and as well as all green parts streaked with blood-red in broken lines. *Leaves* a foot long and more, about half an inch broad, linear, or narrowly linear-lanceolate, finely acuminate, narrowed from the middle to the base and apex, dorsally keeled. *Peduncle* stout, erect, two or more-fld. *Bracts* two to three inches long, tubular, with a lanceolate, acuminate tip. *Ovary* with *pedicel* three to four inches long, strict, erect, puberulous. *Flower* one and a half to one and three-quarters in. broad. *Sepals* oblong, obtuse, green without and blotched with red. *Petals* erect, forming a hood with the dorsal sepal. *Petals* linear-oblong, obtuse, subfalcate, gibbous on one side, white. *Lip* longer than the sepals, bright purple, base connate with the sides of the column ; lateral lobes large, broadly cuneate ; midlobe cleft to the base into two linear, obtuse, divaricating segments; spur one and a half to one and three-quarter inch long, stout, strict, pale, lower half somewhat inflated, tip 2-lobed. *Column* with a bifid, puberulous rostellum.—*J. D. H.*

Fig. 1, Petal ; 2, column with base of lip and lip of spur ; 3, column seen in front ; 4, pollinium :—*All enlarged.*

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Tab. 7565.

DRIMIA Coleæ.

Native of Somali-land.

Nat. Ord. Liliaceæ.—Tribe Scilleæ.

Genus Drimia, *Jacq.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 808.)

Drimia *Coleæ*; bulbo magno globoso, tunicis membranaceis brunneis, foliis synanthiis sessilibus oblongis acutis subcarnosis glabris facie pallide viridibus maculis saturatioribus decoratis dorso concoloribus pallide viridibus, pedunculo foliis breviori, racemo cylindrico laxo, pedicellis brevibus, bracteis minutis, perianthio viridi, tubo brevi campanulato, lobis linearibus recurvatis, staminibus perianthio brevioribus, antheris parvis oblongis, filamentis saturate purpureis, ovario disciformi, stylo elongato.

This very distinct new species of *Drimia* was brought home from the Golis range in Somali-land two years ago by Miss Edith Cole, and flowered by her last October. The expedition on which it was obtained was made in the winter and spring of 1894-5, under the leadership of Mr. E. Lort-Phillips. The two ladies who took part in it, Mrs. E. Lort-Phillips and Miss Cole, both occupied their leisure in making botanical collections, and on their return presented them to Kew, where they were worked out. The two collections contained together 350 species, of which between sixty and seventy proved to be new. These were described in the *Kew Bulletin* for 1895, pages 211 to 230. There are no specimens of the present plant in the dried collection. Six other species of the same genus are known in Tropical Africa, and between twenty and thirty at the Cape, but many of the plants called *Drimia* in gardens really belong to the section *Ledebouria* of the genus *Scilla*.

Descr.—*Bulb* globose, two inches in diameter; outer tunics membranous, brown. *Leaves* contemporary with the flowers, sessile, oblong, acute, half a foot long, by nearly half as broad, rather fleshy, pale, glaucous green on the upper surface, spotted with darker green, concolorous, and pale green beneath. *Peduncle* erect, shorter than the leaves, pale green, spotted with claret-brown. *Raceme*

lax, cylindrical, five or six inches long; pedicels short; bracts minute. *Perianth* green, half an inch long; tube short, campanulate; lobes linear, reflexing. *Stamens* rather shorter than the perianth; filaments subulate, bright mauve-purple; anthers small, oblong. *Ovary* disciform, very broad, and short; style subulate, overtopping the anthers; stigma small, capitate.—*J. G. Baker.*

Fig. 1, A flower, with bract and pedicel; 2, an entire flower, fully expanded; 3, segment of perianth, with stamen; 4, pistil; 5, transverse section of ovary, *all more or less enlarged.*

M. S del J.N. Fitch lith

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Tab. 7566.

SCOLIOPUS Bigelovii.

Native of California.

Nat. Ord. Liliaceæ.—Tribe Medeoleæ.

Genus Scoliopus, *Turcz.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 832.)

Scoliopus *Bigelovii*; herba nana, fere acaulis, glaberrima, caule brevissimo basi radicibus fasciculatis crassis onusto, et vestigiis vaginarum stipato, foliis binis sessilibus late elliptico-ovatis basi vaginantibus post anthesin valde accrescentibus supra saturate viridibus nigro maculatis, subtus pallidis striato-nervosis, pedunculis 3–12 unifloris erectis pallidis rubro irroratis post anthesin valde elongatis decurvis et tortis, floribus erectis, sepalis patente-recurvis ovato-lanceolatis purpureo striatis, petalis sepalis æquilongis linearibus obtusis erectis purpureis, filamentis brevibus erectis, antheris oblongis extrorsum dehiscentibus, ovario sessili trigono in stylum brevem fructu persistentem attenuato, stigmatibus 3 elongatis patentibus apice glandulosis, capsula ellipsoidea triquetra membranacea irregulariter rupta polysperma, seminibus oblongis, testa granulosa, raphe alata.

S. Bigelovii, *Torr. in Pacif. Rail. Rep.* (*Whipple Exped.*) vol. iv. p. 145, t. 22. *S. Wats. in Proc. Amer. Acad.* vol. xiv. p. 272; *Bot. Calif.* vol. ii. p. 180. *Regel Gartenfl.* vol. xxiv. (1875) p. 227, t. 834. *Gard. Chron.* 1894, vol. i. p. 267, fig. 8.

Of the singular genus *Scoliopus*, only two species are known, that here figured, which is a native of the coast ranges of California, from Humboldt County to Marin, and the imperfectly known *S. Hallii*, S. Wats. of Oregon. It clearly belongs to the tribe *Medeoleæ* of *Liliaceæ*, as determined by Bentham, but is not very closely allied to any congener in that group, though the linear, erect petals recall those of *Paris*. The different aspects of the plant in its flowering and fruiting stages are, as shown in the plate, very striking, the leaves in the latter attaining fifteen inches in length, and the strict flowering peduncles lengthening to six inches, and becoming decurved and twisted (whence the generic name). The flowers emit a curious scent, like that of decaying seaweed. In the *Gartenflora* the leaves are represented as unspotted.

Scoliopus Bigelovii was introduced into Europe by Messrs. Haage & Schmidt, of Erfurt, in 1879. The specimen here

figured was purchased for the Royal Gardens from F. H. Horsford, Nurseryman, of Charlotte, Vermont. It flowered in a cold frame in February, 1896.

Descr.—A glabrous, dwarf herb. *Stem* very short, stout, clothed with brown, torn sheaths, and emitting from a short rhizome fascicles of stout, simple root-fibres. *Leaves* two, one and a half to two inches long in the flowering state, greatly enlarged thereafter, attaining eight inches, sessile, base sheathing, ovate, obtuse, or apiculate, very dark green above, with black blotches, paler beneath, and striate. *Peduncles* few or many, fascicled at the top of the stem amongst the leaves; flowering two inches long, erect, strict, white, mottled with red; fruiting greatly elongating up to six inches, decurved and twisted. *Flowers* an inch and more in diameter, erect; perianth deciduous. *Sepals* spreading and recurved, ovate-lanceolate, acuminate, white, closely striped with red-brown. *Petals* as long as the sepals, erect, linear, obtuse, red-brown. *Stamens* short, filaments subulate; anthers small, oblong, opening extrorsely. *Ovary* trigonous, three-celled, narrowed into a short style, with three linear, spreading stigmas. *Capsule* two-thirds of an inch long, ellipsoid, terminated by the persistent style; pericarp thin, bursting irregularly. *Seeds* many, oblong, rough, with a narrowly winged raphe. —*J. D. H.*

Fig. 1, Sepal; 2, flower with sepals removed; 3, anthers; 4, ovary; 5, seed; —*All enlarged*; 6, leaf and fruiting pedicels of the *natural size*.

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Tab. 7567.

AGAVE Schottii.

Native of Arizona.

Nat. Ord. Amaryllideæ.—Tribe Agaveæ.

Genus Agave, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 738.)

Agave (Littæa) *Schottii*; acaulis, foliis dense rosulatis e basi ovata linearibus rigidis apice pungentibus facie canaliculatis dorso carinatis margine filiferis, scapo elongato gracili, floribus in paniculam laxam subspicatam subsecundam dispositis, bracteis parvis ovatis cuspidatis, pedunculis pedicellisque brevibus clavatis, perianthio citrino tubo elongato infundibulari, lobis oblongis tubo brevioribus, staminibus vix exsertis supra medium tubi insertis, antheris magnis linearibus, fructu duro parvo oblongo.

A. Schottii, *Engelm. Notes on Agave*, p. 17. *Collected Works*, p. 315. *Baker Handb. Amaryllid.* p. 307. *Miss Mulford in Report Missouri Gard.* vol. vii. (1896) p. 72, t. 29.

A. geminiflora var.? Sonoræ, *Torrey in Bot. Mex. Bound.* p. 214.

This very distinct *Agave* resembles *A. filifera* and *A. schidigera* in having leaves the edges of which break away into fibres, but differs from them widely in its lax subsecund inflorescence, bright yellow flowers and short stamens. It is very abundant on the mountains of Southern Arizona, at an elevation of about five thousand feet above sea-level. Professor Toumey reports that it so thickly covers large areas, miles in extent, on the southern slopes of the mountains of Santa Catalina that it is almost impossible to travel through it. It is called *Amole* in its native country, and the rootstock is sold as affording a substitute for soap. It was first collected by the late Dr. Arthur Schott in 1855. The Kew plant was purchased at the sale of the collection of Mr. J. T. Peacock in 1889, but did not flower till March, 1897. There is a dwarf variety with serrulate leaves which extends further south than the type.

Descr.—*Rootstock* two inches in diameter, thickly clothed with the fibrous relics of old leaves. *Leaves* forming a dense sessile rosette, linear from an ovate base, a foot long, pungent at the apex, channelled down the face,

acutely keeled on the back, with edges breaking up into fine fibres. *Scape* slender, four or five feet long. *Inflorescence* a lax, subspicate, subsecund panicle a foot long; bracts ovate, cuspidate, very small; peduncles and pedicels very short and stout. *Perianth* bright yellow, two inches long; tube funnel-shaped, longer than the oblong lobes. *Stamens* scarcely exserted beyond the perianth-lobes, inserted above the middle of the tube. *Capsule* oblong, coriaceous, half an inch long.—*J. G. Baker.*

1, Portion of raceme and flower with perianth laid open; 2, anther; 3, top of style and stigma:—*all enlarged*; 4, whole plant greatly reduced.

M.S. del. J.N. Fitch lith.

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Tab. 7568.

QUILLAJA Saponaria.

Native of Chili.

Nat. Ord. Rosaceæ.—Tribe Quillajieæ.

Genus Quillaja, *Molina*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 614.)

Quillaja *saponaria*: arbor mediocris, glaberrima, sempervirens, cortice saponaceo, ramulis gracilibus, foliis sparsis breviter petiolatis ellipticis oblongisve obtusis integerrimis v. marginibus sinuatis coriaceis nervosis stipulis parvis, floribus polygamo-dioicis in paniculas paucifloras terminales et axillares dispositis, lateralibus masculis, terminali fertili, pedicellis 2-bracteolatis, calycis inferi coriacei tomentosi tubo brevi, lobis 5 ovatis valvatis, petalis 5 parvis spathulatis, disco crasso tubum calycis vestiente et in lobos 5 crassos lobis calycinis adnatos emarginatos dilatato, staminibus 10, 5 fundo disci insertis petalis oppositis, 5 alternis apicibus loborum disci insertis, filamentis subulatis, antheris brevibus, carpellis 5 fundo calycis sessilibus axi cohærentibus tomentosis multi-ovulatis, stylis 5 stigmatibus dilatatis depressis, ovulis complanatis biseriatim imbricatis, folliculis 5 basi cohærentibus calyce persistente suffultis oblongis coriaceis, stylis subventralibus stellatim patentibus, seminibus imbricatis compressis superne longe et late alatis exalbuminosis, testa membranaca, cotyledonibus convolutis, radicula infera.

Q. Saponaria, *Molina, Sagg. Stor. Nat. Chili*, vol. ii. p. 175, 354 (1782): *ed. Angl.* vol. i. p. 291. *H.B.K. Nov. Gen. & Sp.* vol. vi. p. 236 *in nota*. *D. Don in Edinb. New Phil. Journ.* vol. xi. (1830-1) p. 230. *Lamk. Ill.* t. 774. *Poir. Encycl.* vol. vi. p. 33; *Suppl.* vol. iv. p. 638. *C. Gay, Fl. Chil.* vol. ii. p. 273. *Köhler, Mediz. Pflanz.* vol. ii. p. 189, *cum. ic. pict. Carrière in Rev. Hortic.* 1873, p. 254, fig. 27.

Q.? Molinæ, *DC. Prodr.* vol. ii. p. 547.

Q. Poeppigii, *Walp. Rep.* vol. ii. p. 52.

Q. Smegmadermos, *St. Laz. in Ann. Soc. Bot. Lyon*, vol. vii. (1880) p. 133.

Smegmaria Saponaria, *Willd. Sp. Pl.* vol. iv. p. 1123.

Smegmadermos emarginatus, *Ruiz & Pav. Fl. Per. et Chil. Prodr.* p. 144, t. 31; *Syn. Veg. Fl. Per. & Chil.* p. 288.

Cullay, *Molina ex Steud. Nom. Ed. II.* vol. i. p. 452.

Quillay, *Frezier, Voy. South Sea*, p. 118 (1717.)

Quillaja Saponaria is a common tree in the hills and valleys of Chili, between the parallels of 31° and 38° S., ascending to 6500 ft. above the sea, and flowering from December to February. Its wood, though not procurable of any great size, is valued for its hardness, and is chiefly used for props in mines, and for making stirrups. Of greater account is its bark, which, when pulverized in water, foams like soap, and is used as an efficacious sub-

stitute for that article, as also for dressing the hair. Both Chilians and Araucanian Indians attribute the luxuriance of this ornament of their persons to its use. There is a considerable import of the bark into England; and it appears annually in the trade lists, the wholesale price being 6*d*. per pound, and pulverized 1*s*. A detergent hair-wash is prepared from it, and it has been extensively used to produce a head on stale beer.

There is but one other species of the genus, *Q. brasiliensis*, Mart., of South Brazil.

The figure here given was made from a specimen kindly sent by Thomas Hanbury, Esq., F.L.S., which flowered in his celebrated garden of La Mortola, Ventigmiglia, in February of this year.

Descr.—A small tree, thirty to forty feet high, sparingly branched, with ashy bark; branchlets slender, glabrous. *Leaves* one and a quarter to two inches long, very shortly petioled, elliptic or oblong, tip obtuse or rounded, margin entire or undulate; stipules two, small. *Flowers* about two-thirds of an inch broad, few together in a small panicle, greenish yellow, shortly pedicelled, the terminal in the panicle fertile, the lateral male. *Calyx-tube* short; lobes five, ovate, valvate. *Petals* five, small, spathulate. *Disk* fleshy, occupying the base of the calyx, and projecting five lobes which are adnate to the surfaces of the calyx-lobes. *Stamens* 10, five opposite the petals inserted in the bottom of the disk, and five on the lobes of the disk; filaments subulate, anthers small. *Carpels* five, cohering by their bases, tomentose, many-ovuled; styles short, stigmas dilated. *Fruit* of five obovoid, coriaceous, tomentose, stellately spreading follicles, seated on the persistent withered calyx.—*J. D. H.*

Fig. 1, Flower; 2 and 3, stamens; 4, pistil; 5, ripe fruit; 6, seed:—*All enlarged.*

M.S.del, J.N Fitch.lith

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Tab. 7569.

ODONTOGLOSSUM RETUSUM.

Native of Peru.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Odontoglossum, *H.B.K.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 561.)

Odontoglossum (Myanthum) *retusum*; pseudobulbis ovoideis compressis lævibus nudis, foliis anguste lineari-lanceolatis obtusis, scapo gracili elongato vaginis subulatis instructo, paniculæ elongatæ angustæ rachi ramisque remotis paucifloris gracilibus brunneis, bracteis ovatis acutis membranaceis pallidis, pedicellis cum ovariis ½–⅔ poll. longis coccineis, sepalis petalisque aurantiaco-coccineis oblanceolatis acuminatis, sepalo dorsali ⅔ poll. longo porrecto, lateralibus longioribus subparallelis deflexis et paullo recurvis, petalis sepalo dorsali subæquilongis elliptico-lanceolatis acuminatis, labello sessili fere quadrato aureo undulato apice truncato cuspidato, lobis lateralibus basilaribus parvis rotundatis, disco basi ruguloso et callis geminis magnis subglobosis instructo, **columna crassa late 2-alata, alis porrectis.**

O. retusum, *Lindl. in Benth. Pl. Hartweg.* p. 152; *Fol. Orchid., Odontoglossum*, p. 13. *Walp. Ann.* vol. vi. p. 837.

The section *Myanthum* was established by Lindley (Fol. Orchid., p. 11), for the reception of a few species of *Odontoglossum*, in which the lateral sepals, instead of being widely spreading, are more nearly parallel and deflexed more or less under the lip, and the lip is sessile, or nearly so; the lateral sepals should further be manifestly clawed, but this is not the case in the plant here figured.

O. retusum was discovered by Hartweg in 1841, on rocks in the mountains of Saraguru, near Loxa, in Ecuador (not Peru, as stated by Lindley) in no doubt a temperate climate, the Loxa valley being 6–8000 ft. above the sea. It was imported into this country upwards of fifteen years ago, as there are specimens in the Kew Herbarium received from Messrs. Veitch in 1884. There are also others received from Messrs. Sander & Co. in 1891, and in the same year from Mr. Linden's establishment (L'Hortic. Internationale) in Brussels. The specimen figured was communicated by E. H. Woodall, Esq., of St. Nicholas House, Scarborough, in April, 1897.

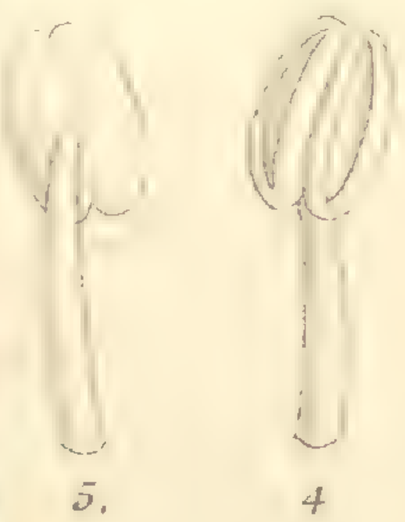
December 1st, 1897.

Descr.—*Pseudobulbs* one to nearly two inches long, ovoid, compressed, pale green, quite smooth, with two or three lanceolate, brown, basal loose scales. *Leaves* solitary on the old pseudobulb, and two to three together in the new flowerless shoots; those from the pseudobulbs six to eight inches long, narrowly linear-lanceolate, obtuse, dark green and channelled down the middle above, paler with a distinct midrib beneath. *Scape* tall, slender, pale brown, enclosed below by the long narrow sheath of a linear leaf. *Panicle* a foot long or more, narrow; rachis slender, pale brown; branches one to two inches long, distant, spreading and recurved, three- to five-flowered; bracts ovate, acuminate, pale, membranous; pedicels with ovary one half to two-thirds of an inch long, scarlet. *Flowers* about an inch broad when spread open. *Sepals* and *petals* orange-scarlet, with paler margins, oblanceolate, acuminate; dorsal sepal arched, two-thirds of an inch long, lateral longer, deflexed and recurved; petals about equalling the dorsal sepal. *Lip* shorter than the sepals, golden yellow, broadly trulliform, undulate, basal lobes short, rounded; apex truncate or retuse, cuspidate; disk rugulose towards the base, where are two large globose, prominent calli. *Column* short, stout, with two broad, prominent wings.—*J. D. H.*

Fig. 1, Lip and column; 2, pollinia:—*Both enlarged.*

7571
Correct

1



5. 4

6

2 3

M S del, J.N. Fitch lith.

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Tab. 7570.

KNIPHOFIA breviflora.

Native of Natal and Orange Free State.

Nat. Ord. Liliaceæ.—Tribe Hemerocallideæ.

Genus Kniphofia, *Mænch.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 775.)

Kniphofia *breviflora*; foliis linearibus longe acuminatis integris sordide viridibus dorso acute carinatis, pedunculo stricto erecto foliis aequilongo, racemo oblongo-cylindrico supra basin denso, pedicellis brevibus, inferioribus cernuis, bracteis lanceolatis, perianthio parvo subcylindrico pallide luteo lobis ovatis, staminibus demum leviter exsertis, stylo staminibus longiore, fructu parvo globoso.

K. breviflora, *Harv.*; *Baker in Journ. Linn. Soc.* vol. xi. 361; *Fl. Cap.* vol. vi. p. 277.)

There are now thirty-five species of this genus known at the Cape, and thirteen species in Tropical Africa, only one of which is common to both areas. The present is one of the smallest known species, being nearly allied to *K. modesta*, Baker (*Bot. Mag.* tab. 7293), but with the flowers bright yellow, instead of white. It was first gathered in 1862 by Mr. Thomas Cooper in the Orange Free State, and was named in manuscript by Professor Harvey shortly before his death. It was again collected in Natal in 1895 by Mr. J. Medley Wood, and by him introduced into cultivation through Mr. Max Leichtlin of Baden Baden. Our drawing was made from a plant that flowered at Kew in October, 1896. As it was found in Natal at an elevation of between five thousand and six thousand feet above sea-level, no doubt it will be perfectly hardy. The Natal plant is rather more robust, and the flowers are a little larger than in that from the Orange Free State, but I think they can only be regarded as forms of a single species.

Descr.—*Leaves* narrowly linear, one foot and a half or two feet long, tapering gradually to a long point, dull green, acutely keeled on the back, entire on the margin. *Peduncle* stiffly erect, as long as the leaves. *Raceme*

dense above the base, oblong-cylindrical, three or four inches long; upper flowers ascending, lower drooping; pedicels very short; bracts scariose, lanceolate. *Perianth* bright, pale yellow, subcylindrical, a quarter or a third of an inch long; lobes short, ovate. *Stamens* finally just exserted. *Style* finally overtopping the anthers. *Fruit* small, globose—*J. G. Baker.*

Fig. 1, Cross section of leaf; 2, bract; 3, an entire flower; 4, front view of anther; 5, back view of anther :—*All more or less enlarged.*

7570
Correct

M S. del J N. Fitch lith

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Tab. 7571.

HABENARIA RHODOCHEILA.

Native of Southern China.

Nat. Ord. Orchideæ.—Tribe Ophrydeæ.

Genus Habenaria, *Willd.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 624.)

Habenaria (Platyglossa) *rhodocheila*; tuberibus carnosis, caule folioso, foliis lineari-oblongis acuminatis undulatis, basi amplexi-caulibus, racemo laxo multi-floro, bracteis lanceolatis infimis ovario gracili curvo æquilongis, sepalis viridibus, dorsali hemispherico, lateralibus deflexis oblongis obtusis apicibus tortis, petalis lineari-spathulatis viridibus erectis, labello sepalis 2–3-plo longiore unguiculato rubro-aurantiaco lobis lateralibus oblongis obtusis patenti-decurvis, intermedio minore breviter unguiculato bipartito segmentis dimidiato-ovatis obtusis, calcare valido labello duplo longiore incurvo flavido infra medium subinflato apice acuto, ore lamella ungue labelli orta clauso, antheræ tubulis suberectis, rostello brevi triangulari, stigmatis processubus crassis decurvis.

H. rhodocheila, *Hance in Ann. Sc. Nat. ser.* v. vol. v. (1866) p. 243.

Habenaria rhodocheila was made known by the late Dr. Hance, F.L.S., when resident at Whampoa, and described by him from specimens collected by Dr. Sampson in 1864 on rocks near the Buddhist monastery of Fi-loi-tsz, on the banks of the North River, above Canton. It belongs to a section of the genus of which there are many Asiatic species, characterized by the deflexed lateral sepals, erect petals forming a hood with the dorsal sepal, the long, tubular anther-cells and prominent stigmatic processes. Dr. Hance regarded it as most closely allied to *H. crinifera*, Lindl. (Wight Ic. Pl. Ind. Or. t. 926), but that species differs much in habit, being scapigerous, with the leaves nearly all radical, and has crenate and caudate lobes of the lip. It is much more nearly and indeed very closely allied to *H. militaris*, Reichb. f., of Cambogia.

Tubers of *H. rhodocheila* were received at the Royal Gardens, Kew, from Mr. Chas. Ford, Superintendent of the Gardens, &c., of Hong Kong, in January, 1895, which flowered in a warm house in June, 1897. The species varies greatly in the colour of the lip; Hance describes it as deep rose-colrd., in the Kew plants it varied from orange-red to madder yellow.

December 1st, 1897.

Descr.—*Tubers* cylindric, fleshy. *Stem* including the raceme, a foot high and upwards, leafy throughout, terete, green. *Leaves*, lower spreading, four to six inches long, by nearly one broad, linear-oblong, acuminate, undulate, base amplexicaul; upper much smaller, suberect, lanceolate. *Raceme* three to five inches long, rather laxfld.; bracts lanceolate, acuminate, green, of the lower flowers as long as the ovary, of the upper shorter. *Ovary* an inch long, slender, curved, subrostrate. *Sepals* green, less than half an inch long, dorsal hemispheric; lateral oblong, obtuse, tips deflexed. *Petals* linear-spathulate, green, erect, margining the dorsal sepal. *Lip* twice as long as the sepals or more, shortly clawed, from rose-red to deep orange-red, side-lobes shorter than the mid-lobe, pointing forward, oblong, obtuse, mid-lobe smaller, clawed, deeply 2-lobed; spur nearly twice as long as the lip, stout, incurved, dirty yellow. *Anther-tubes* ascending, tips coloured. *Rostellum* small, triangular. *Stigmatic processes* stout, sausage-shaped, decurved, of the colour of the lip. —*J. D. H.*

Fig. 1, Side view of sepals, petals, and column; 2, front view of column and base of lip:—*Both enlarged.*

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